AMERICAN

MARCH • 1953

Cinematographer

THE MAGAZINE OF MOTION PICTURE PHOTOGRAPHY

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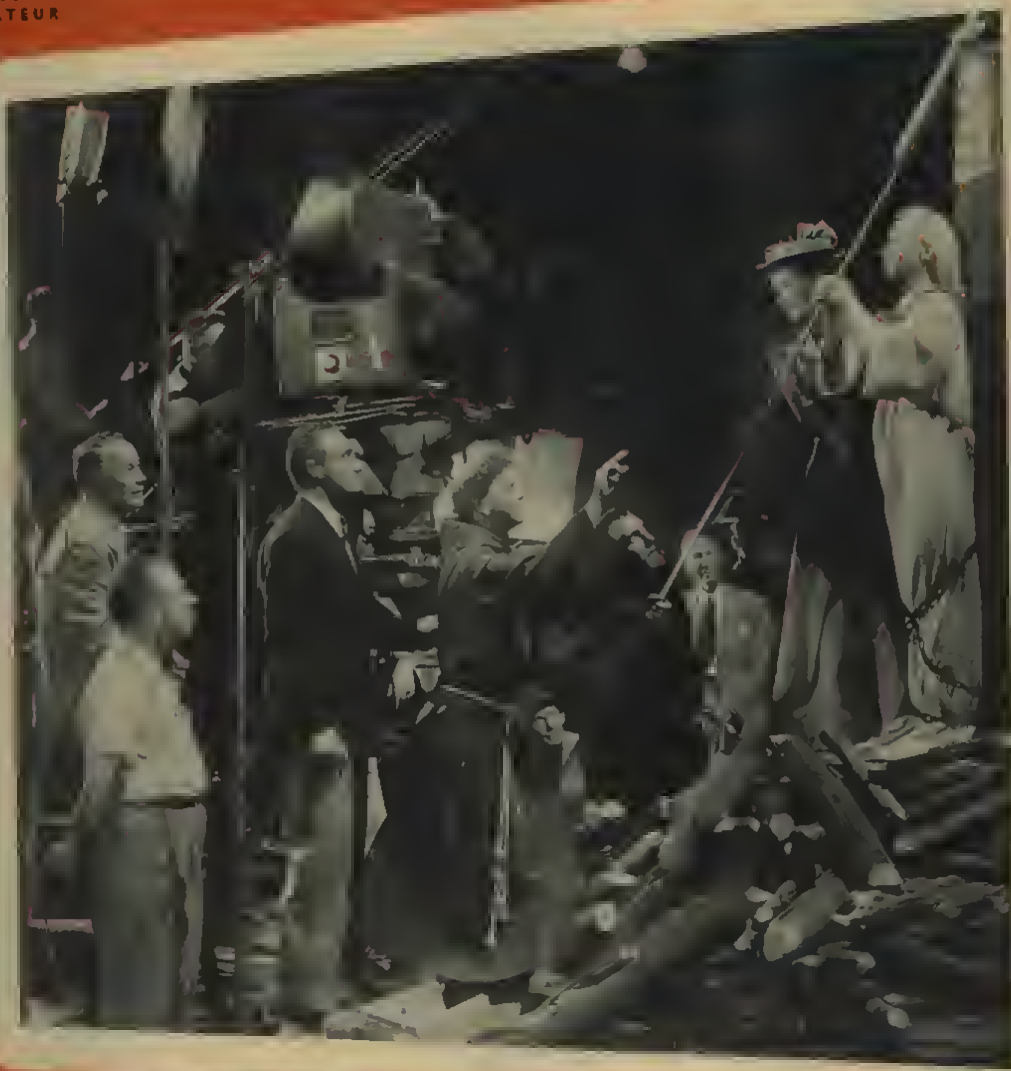

In This Issue . . .

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25c

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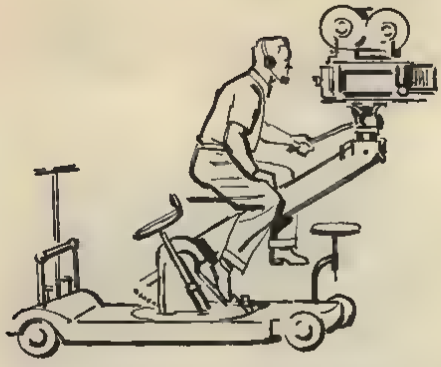

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	For Processing as Negative		For Processing by Reversal	
TYPE	Daylight	Incandescent	Daylight	Incandescent
904 B	25	20	—	—
926 B	80	64	—	—
927 B	125	100	—	—
901 A	40	32	64-125	50-100
914 A	32	25	40-64	25-40
930 A	50	40	64-80	50-64
931 A	80	64	125-160	100-125

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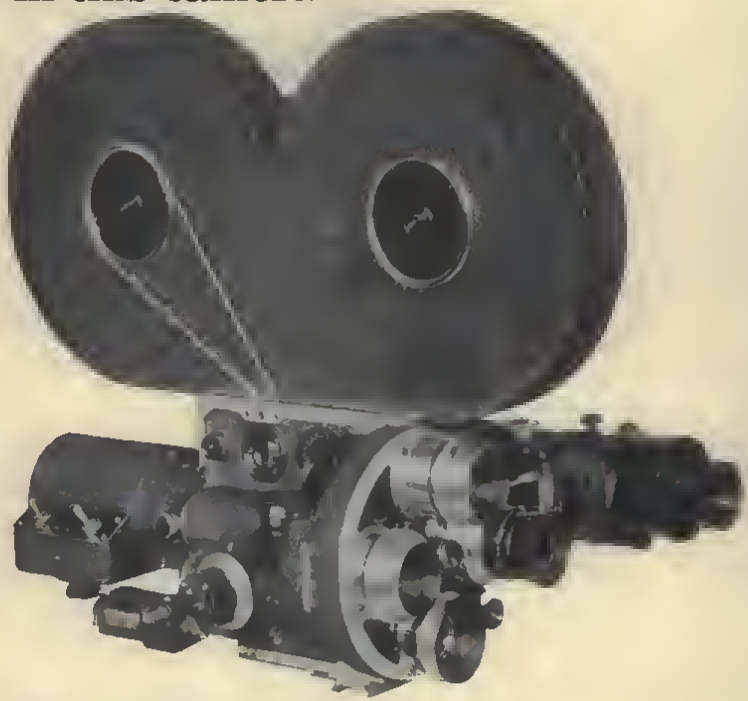

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automatically at start of take. Manufacturer is Joseph Yolo, 5968 Santa Monica Blvd., Hollywood 38, Calif. Unit is also installed complete for $57.00 by Tulio Pellegrini, 1545 Lombard St., San Francisco, maker of variable shutters for the Bolex H-16.

Stereophonic Sound — Anticipating the trend toward use of stereophonic sound for both 3-Dimension and wide-screen films, Kinevox, Inc., 116 So. Hollywood Way, Burbank, Calif., has developed the Kinevox portable synchronous stereophonic magnetic film recorder. Recording speed is 90 ft. per minute on 17½-mm film. Also available is theatre playback equipment, rack-mounted, in any reel capacity. Conventional Kinevox recorders can also be converted to record stereophonic sound, according to Len Roos, company president.

Please mention *American Cinematographer* when writing for further information.

400-ft. Magazine For Bolex—Toledo Cine Engineering, 1309 Milburn Ave., Toledo 6, Ohio, offer a 400-foot film magazine for the Bolex H-16 camera together with an electric motor drive for those who wish to use this popular camera for professional film production.

The complete conversion consists of a saddle block permanently attached to the Bolex camera; one 400-ft. external magazine with light trap; electric motor (3 types available); set of recessed roll-

(Continued on Page 140)

Vol XXXIV, No. 3, March 1953, AMERICAN CINEMATOGRAPHER, published monthly by A.S.C. Agency, Inc., 1782 N. Orange Dr., Hollywood 28, Calif. Subscription U.S., Canada, and Pan-American Union, $3.00 per year. Foreign, $4.00. Entered as Second Class mattar November 14, 1937, at the post affica at Los Angeles, Calif., under act of March 3, 1879.

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PUBLICATION OF AMERICAN SOCIETY OF CINEMATOGRAPHERS

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Editorial and Business Office: 1782 N. Orange Dr., Hollywood 28, Calif.
Telephone: GRanite 2135

VOL. 34 MARCH 1953 NO. 3

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ON THE COVER

SHOOTING 3-D MOVIES AT WARNER BROTHERS—Peverell Marley, ASC, (left, seated) directed the photography of "House of Wax," Warner Brothers' initial stereo feature, which was photographed last month in Warnercolor with a Natural-Vision 3-D camera. Although it's hard to distinguish the wax figures from real persons on the set, girl wearing hat is Phyllis Kirk. Directing the scene is Andre de Toth, third from left.

AMERICAN CINEMATOGRAPHER established 1920, is published monthly by the A. S. C. Agency, Inc., 1782 N. Orange Dr., Hollywood 28, Calif. Entered as second class matter Nov. 18, 1937, at the postoffice at Los Angeles, Calif. under act of March 3, 1879. SUBSCRIPTIONS: United States and Pan American Union $3.00 per year, Canada, $3.00 per year, Foreign, $4.00. Single copies 25 cents, back numbers, 30 cents, foreign single copies, 35 cents, back numbers 40 cents. Advertising rates on application. Copyright 1953 by A. S. C. Agency, Inc.

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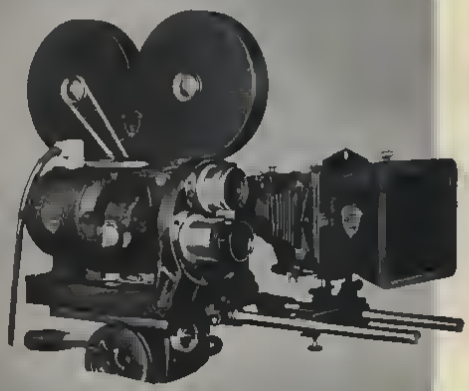

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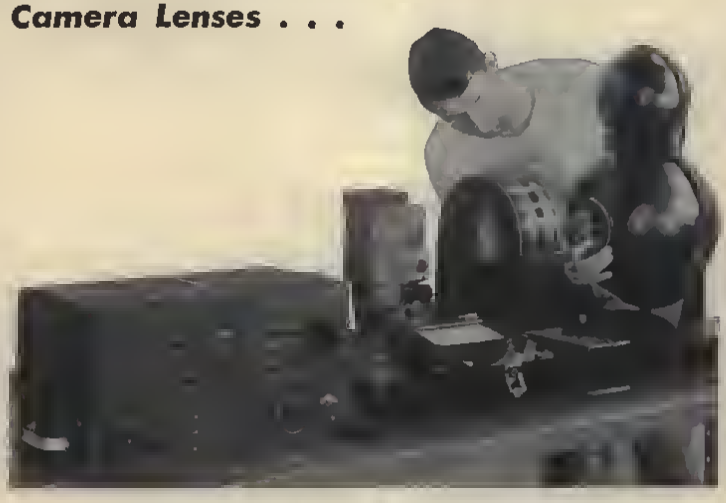

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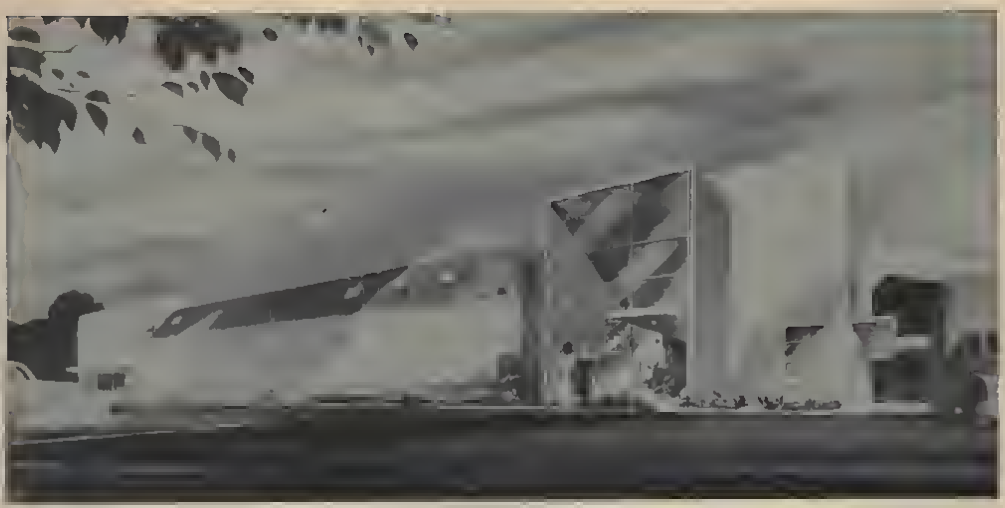

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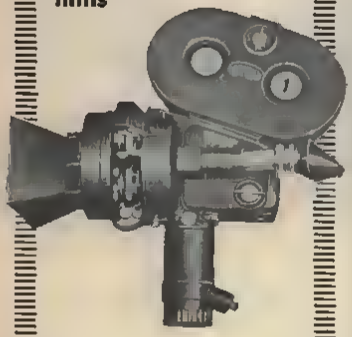

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Hollywood
Bulletin Board

WHEN BENNIE PINGA, official of Philippine Society of Cinematographers visited the ASC last month, Fred Jackman (l), ASC veepee, and Clyde DeVinna (r) presented him with important technical magazines and papers for PSC's new technical library

JONN BOYLE, ASC, drew assignment to shoot the second episode of Sol Lesser's "3-D Follies." Production is being filmed in color with Stereo-Cine Corp's 3-dimension camera.

•

KARL STRUSS, ASC, has been elected chairman of the Stereo Division of the PSA, which is holding its 1953 annual convention in Los Angeles in August.

•

DON MALKAMES, ASC, east coast cinematographer who photographs the "Man Against Crime" series of TV films in New York, was a Hollywood visitor last month.

•

KARL FREUND, ASC, who shares credit with Desilu Productions for winning an Emmy Award for Best Comedy Show on Television, was presented a certificate commemorating his contribution to show as director of photography.

•

JACKSON J. ROSE, ASC, is readying a new edition of his "American Cinematographer Handbook." New eighth edition should be off the press next month.

•

ARCHIE STOUT, ASC, will share dual "Oscar" awards with Winton Hoch, ASC, in event "The Quiet Man" is voted best in color photography class this month by Academy of Motion Picture Arts and Sciences. Hoch, who directed the Technicolor photography of the picture, has petitioned the Academy to recognize Stout's contribution to the production as director of 2nd unit photography.

•

WILTON HOLM, ASC, formerly with Cinecolor, is now a representative of DuPont on the east coast.

•

NATIONAL MAGAZINES featured the work of the industry's leading directors of photography in text and pictures last month. Phil Tannura, ASC, and his camera crew were publicized in a feature story in the *Saturday Evening Post*, while more than sixteen ASC members were pictured in a feature story in the March issue of *Photography*.

•

LOYAL GRIGGS, ASC, and Irmin Roberts, ASC, are in India on a photographic assignment for Paramount Studio.

•

FREDERICK A. YOUNG, ASC, British cinematographer, completed the photography of "Mogambo" last month. The Technicolor production, starring Clark Gable and Ava Gardner, was produced by MGM at its London studio and on location in Africa.

(Continued on Page 139)

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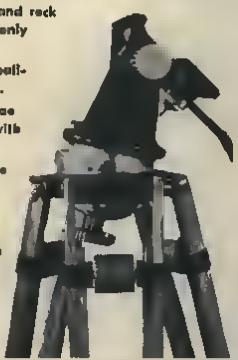

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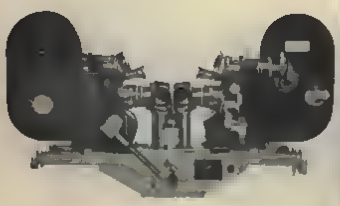

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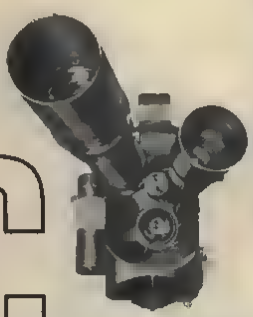

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1952-53 Cinematography Awards

Non-industry award-sponsors cite Crosby, Barnes, Marley and Hoch for outstanding photography.

FLOYD CROSBY, ASC
"High Noon"

GEORGE BARNES, ASC
"Greatest Show"

PEV MARLEY, ASC
"Greatest Show"

FOUR DIRECTORS OF PHOTOGRAPHY, all members of the A.S.C., were cited last month for achievement in photography. The Hollywood Foreign Correspondents Association presented its Golden Globe Awards to Floyd Crosby, ASC, for best black and white photography of Stanley Kramer's "High Noon," and to George Barnes, ASC, and J. Peverell Marley, ASC, for the Technicolor photography of Cecil B. DeMille's "The Greatest Show On Earth," cited for "best color photography."

Look magazine, in its annual presentation of awards for achievement in the motion picture industry, honored Winton Hoch, ASC, for the Technicolor photography of Argosy Productions' "The Quiet Man."

WINTON HOCH, ASC
"The Quiet Man"

Annually, and in advance of the yearly "Oscar" awards of the Academy of Motion Picture Arts and Sciences, several non-industry sponsors single out stars, producers and technical personnel of the Hollywood motion picture studios for outstanding achievement during the preceding year.

Of these awards, perhaps the Golden Globe and the Look awards are the most important to the industry's directors of photography, second in importance only to the Academy's "Oscars."

For Crosby, Barnes and Marley, it is their first Golden Globe Awards. Frank Planer, ASC, noticeably missing from the Golden Globe roster this year, has won three Globes in a row.

Winton Hoch's Look award is his first "The Quiet Man," for which he won the award, is also nominated in the color photography class for an Academy Award.

In presenting its 12th annual Achievement Awards, Look magazine cited 18 films as "best Pictures of the year." Contributing to the success of these 18 films was the photography. In the light of this, the respective directors of photography deserve mention here.

The 18 productions honored as "best pictures" by Look are listed below, with the name of the cinematographer credited first:

Irving Glassberg, ASC, "Bend In The River" (U-I); James Wong Howe, ASC, "Come Back Little Sheba" (Par); Otto Heller, "The Crimson Pirate" (WB); George Barnes, ASC, Pev Marley, ASC, "Greatest Show On Earth" (Par); Harry Stradling, ASC, "Hans Christian Andersen" (Goldwyn); Charles Lawton, ASC, "The Happy Time" (Kramer-Col); Floyd Crosby, ASC, "High Noon" (Kramer); Freddie Young, ASC, "Ivanhoe" (MGM); Karl Struss, ASC, "Limelight" (Chaplin); Joseph Walker, ASC, "The Marrying Kind" (Col.); Ossy Morris, "Moulin Rouge" (Romulus); Jos. LaShelle, ASC, "My Cousin Rachel" (Fox); Winton Hoch, ASC, "The Quiet Man" (Argosy); Hal Rosson, ASC, "Singin' In The Rain" (MGM), Leon Shamroy, ASC, "Snows of Kilimanjaro" (Fox), Charles Lang, ASC, "Sudden Fear" (RKO), and Leon Shamroy, ASC, "With A Song In My Heart" (Fox)

END

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Practical Filming Techniques For Three-dimension And Wide-screen Motion Pictures

By CHARLES G CLARKE, ASC

President, American Society of Cinematographers

ALTHOUGH VARIOUS METHODS for wide screen and three dimensional motion pictures have been tried out on an experimental basis since the inception of the cinema, no concerted effort has been attempted by the industry to introduce this advancement for general exhibition until now. As progress from black-and-white to color photography followed a slow process of development, the next step towards reality on the screen — pictures with natural depth — has likewise long been delayed. This has been partly due to a reluctance to attempt something new so long as the old was acceptable, and partly because of the radical adjustments necessary on the part of the spectator as well as the producer to make these new techniques possible.

Ches G. Clarke

It is unnecessary here to go into the theory of binocular vision and depth perception. We all know that every person having normal vision sees depth because each eye sees a scene from a slightly different angle than the other. This angle however is all important. With the average person the eye separation or interocular distance is 2½ inches or about 64 millimeters. For natural reproduction by photographic means it is therefore imperative that the lenses of 3-D cameras making the left and right hand pictures be spaced no more or less than this normal separation. Any violation of this rule of nature will result in false perspective and unnatural results on the screen.

True, in certain special effects, the interocular separation will have to be varied; but for normal scenes the camera lenses should be properly spaced. Unfortunately, there have been camera installations which have violated this rule. The 1000 foot film magazine has forced the cameras apart when they have been set up to face each other with reflecting mirrors between them. When used in this way with wide angle lenses, elongation of the subjects and overdrawn depth perspective result. The cameras must be accurately mounted so that each one records an identical image as to size, alignment and synchronization of picture to the other.

As the human eyes constantly "toe in" or converge as they look at various objects in different planes of depth, so must the cameras be equipped to converge on the principal object of interest. Presuming that the cameras to be used fulfill these basic requirements, what are some of the practical filming techniques that must be observed? As literature on this subject is almost nonexistant, perhaps the observations of some years of my experience in this field will be of assistance.

While there are no great mysteries connected with three-dimension photography, basic rules do apply, and to a certain extent we must learn to undo some of the things we have been doing in flat photography all these years in an attempt to simulate third dimension. In the past we have been using very wide angle lenses, backlighting, and silhouette foreground objects to give the illusion of depth to planar pictures. We have been forcing and even over-drawing perspective with the 25mm lens. Common sense therefore dictates that with true three-dimension filming these illusions are not only unnecessary but can be detrimental. Except for special effects, the normal long shot in 3-D is best reproduced by no shorter focal length lens than the 40mm. The 50mm is ideal for medium shots and the three-inch lens is excellent for closeups.

For long shots some tolerance is allowable in excess interocular spacing, but for closeups, even with the three-inch lens, the lens spacing must not exceed 2½ inches for natural reproduction.

Some readers may recall that in the very early days of film making it was a hard and fast rule that the feet of the actor must always be shown. Audiences had to see what the characters were standing on! This seems ridiculous now that we are educated to seeing closeups with no visible means of support; but it took many years to get audiences adjusted to this technique of the cinema. Likewise, it will take some time before audiences will accept persons or objects standing out in front of the screen in 3-D films, where in reality they belong. In time this will come about of course, but for the present it is probably better not to include objects too close to the foreground or ahead of convergence. Branches of trees, foreground lamps and such had best be left out or moved back into the scene for the time being. Likewise spectators are not yet accustomed to seeing objects out over the audience so the projectors will be converged from infinity or "toed-in" to a middle foreground in order to push back the actors to the plane of the screen. Distant objects behind them will therefore appear "through the window" or in back of the screen. For this reason the screen becomes a window frame, and the composition of the scenes must be arranged so that the actors are completely within

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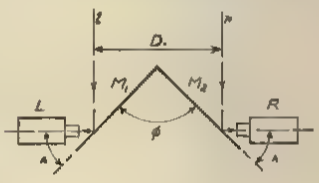

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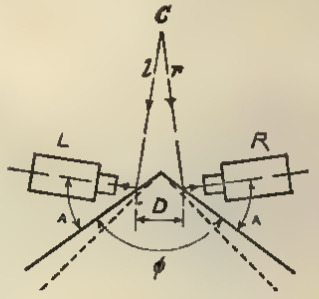


2

ABOVE DIAGRAMS show method of setting stereoscopic apparatus of a typical 3-D motion picture camera for two types of shots (1) distant, and (2) closeup. For sake of clarity, the various elements have not been held to proportionate size. M1 and M2 are the adjustable angular front-surfaced mirrors which reflect scene or image into lenses of the cameras L and R. D is the stereoscopic base dimension—variable for each type shot. To vary the lens interaxial, the cameras are moved laterally toward or away from the mirrors. Changing angle of mirrors, as in (2), alters the convergence, and in this method the cameras may also be pivoted so that the angles A between cameras and mirrors are always retained at 45°. Ideal screen results in 3-D depends primarily on the proper setting of the interaxial distance (also called the interocular), the convergence, and correct focus.

All Hollywood Studios

PARAMOUNT—This studio's 3-D camera is conventional type with two Mitchell 35mm cameras mounted in opposed position. Lenses record image reflected on two 45° mirrors, as shown above. An improved camera providing narrower interocular is being developed. Peering through finder are actor Fernando Lamas (L) and director Edward Ludwig.

COLUMBIA—While studio engineers are perfecting their own 3-D camera, studio's initial 3-D feature, "Fort Ti," is being filmed with a Natural-Vision 3-D camera, under direction of Lester White, ASC.

MORE SWEEPING IN MAGNITUDE, perhaps, than the advent of sound two decades ago is the cinepanic which has gripped Hollywood's film production centers as result of sudden public acclaim for stereoscopic and wide-screen movies, following exhibition of Cinerama and "Bwana Devil"—the latter Hollywood's first 3-D feature film production.

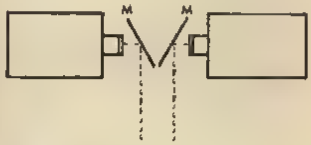
The resulting impact on the technical personnel of the studios has been tremendous, their response phenominal. In many cases, the "front office," coming to a sudden decision to plunge into 3-D production, relayed its wishes to the studio camera department, and in less than 48 hours the studio had its first 3-D camera rig set up and making tests. Paramount had only to go to its warehouse and dust off stereo filming equipment it had successfully built and tested years ago. The production department had camera tests in less than 20 hours. MGM's camera department, following the "go ahead" signal, put together its first 3-D camera and was shooting tests in color the following day.

The same feverish activitity, meantime, was holding forth in almost every other major studio. Others, a little hesitant to go into production on a stereo camera, or perhaps in order to get into 3-D film production with a minimum of delay, leased the stereo camera equipment of Natural Vision Corporation, which supplied cameras to Arch Oboler, producer of "Bwana Devil."

Following is the American Society of Cinematographer's survey of three-dimension film production activity in the major studios as of February 20th:

Columbia—One of the first to get into actual 3-D production. Shooting with Natural Vision's 3-D camera equipment is "Fort Ti," with Lester White, ASC, directing the stereo photography. A second 3-D production, "The Man Who Lived Twice," goes before the stereo

WARNER BROTHERS—This studio's initial 3-D film, "House of Wax," is being shot with Natural-Vision cameras by Bert Morley, ASC. Meanwhile, studio engineers are progressing with Warner's own 3-D camera, seen to go into action. Natural-Vision's rig comprises two Mitchells mounted in opposed position, has variable twin mirrors.



2 Mirrors

DIAGRAMS SHOW the three prevailing systems of 3-D motion picture cameras, now in general use in Hollywood: (1) two cameras mounted opposed, record images from two variable mirrors (M), (2) two cameras mounted at right angles, with one recording image reflected in mirror and other recording scene direct, and (3) twin cameras,

Shooting 3-D Films

A.S.C. Survey shows all majors in quick swing to stereo production. Most of them have developed their own 3-D cameras; are training cameramen to photograph feature films in the new stereo medium.

By ARTHUR GAVIN

cameras on February 27th, with Floyd Crosby, ASC, directing the photography. A third stereo production, "Renegade Canyon," gets under way on March 10th.

Meantime, the studio is engineering its own 3-D camera equipment under the guidance of Gerald Rackett, company vice-president and technical head. Details of the equipment so far is a closely guarded secret.

The Natural-Vision 3-D camera, which was described at length in *American Cinematographer* for August, 1952, ("Hollywood Launches 3 D Film Production," page 336) comprises two Mitchell 35mm cameras mounted on a stereo base having precision adjustments for parallax, convergence, etc. The equipment is completely blimped, a feature not yet incorporated successfully in cameras developed by some of the studios. It is extremely flexible, affording accurate alignment of each camera through individual finders, in addition to the central finder positioned just behind the adjustable reflecting mirrors.

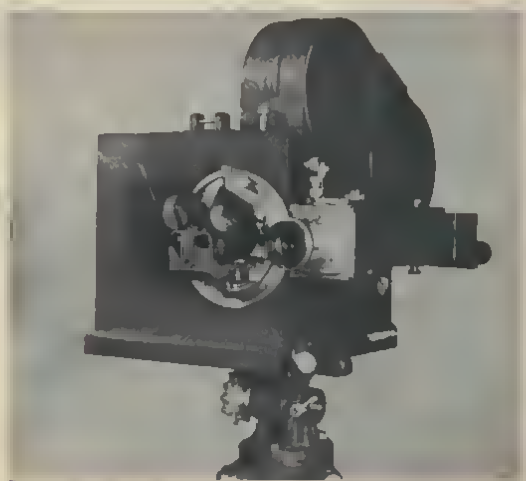
Metro-Goldwyn-Mayer—This studio engineered its own 3-D camera, utilizing two Mitchell 35mm cameras mounted at right angles, (See accompanying photo) and

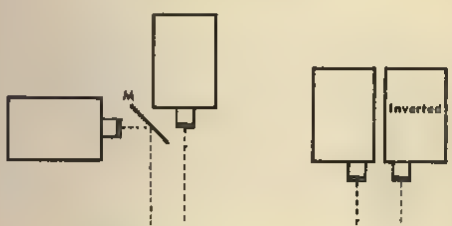
(Continued on Next Page)

STEREOCINE'S 3-D camera comprises 2 Cameraettes mounted opposed, shooting through mirrors. Sol Lesser used this camera for his initial 3-D film. Pictured (L to R) are developers of camera: R. G. Wolff, head of StereoCine Corp., and Henry Ludwin and A. S. Godrero.

MGM's 3-D camera design follows radical departure in that two Mitchell 35's are mounted at right angles. Only one mirror is used. Because of several innovations, extreme closeups in perfect condition are claimed for the camera, which is being inspected here by MGM executive, Arthur Loew, Jr.

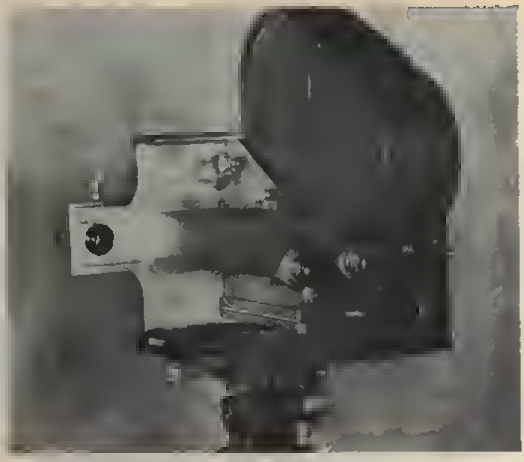
RKO has acquired use of the Norling 3-D camera, said to be the ideal stereo camera in that it was constructed especially for 3-D, has many unusual features. Studio began production on its initial 3-D feature with this camera, shooting footage of New Orleans Mardi Gras, under direction of the inventor, J. A. Norling.





1 Mirror — No Mirrors

mounted side by side, with one camera inverted to permit closest possible interocular distance (distance between lenses.) This system requires no mirrors. Convergence, parallax, and variable interocular adjustments are provided through various systems of adjusting mirrors, angle of cameras, etc.



REAR VIEW of the Norling 3-D camera pictured on preceding page. An important feature is the binocular viewfinder which permits lining up both camera lenses while viewing scene in three-dimension. Lever extending from base effects quick rack-over

began its first 3-D production, 'Arena" in Anseo Color the first week in February with Paul Vogel, ASC, directing the photography. Other 3 D productions are in the process of being scheduled, but the studio is moving cautiously in view of its plan also to go into the CinemaScope system of wide-screen film making, developed by 20th Century Fox.

MGM's system is tentatively tradenamed the "Tri-Dee' process. Its stereo camera is the development of John Arnold, ASC, studio's executive director of photography, and is said to incorporate a number of exclusive features patented by Arnold. Despite this, and unlike other studios, MGM disdained any pretense of secrecy in its developments, was one of the first studios to have its own 3-D camera in use on a feature production. Meantime, company is building eight additional 3-D camera units, including two for its London studios—indicating that MGM is planning a substantial schedule of 3-D productions in the future.

One of the important features claimed for MGM's stereo camera is its ability to make super-closeups without any distortion. One camera shoots the scene directly, while the second, set at right angle, picks up the scene reflected by a variable 45° mirror. The negative from this camera must be reversed in the printing. According to Arnold, mounting the cameras at right angles permits an interocular adjustment smaller than the conventional or "basic" 2½ inches, which accounts for the camera's ability to record undistorted "tight" closeups as well as precisely parallaxed and converged medium and long shots.

Paramount—This studio was the first major to get into 3-D film production following the general swing to the new medium. Studio had developed a stereo camera years before, took it out of storage and started shooting "Sangaree," early in February, using Eastman Type B color negative, with Lionel Lindon, ASC, directing the photography. Paramount's system, which is tradenamed Paravision, comprises two Mitchell 35mm cameras mounted in opposed position on a stereo base having micrometer adjustments for variable interocular and convergence. Both cameras carry standard 1000-ft. film magazines. The viewfinder is mounted just above the variable mirrors. Reports are that studio engineers are presently constructing a new model camera which will mount the film magazines at an angle in order to permit closer positioning of lenses for narrower interocular spacing, so essential for closeups.

Paramount also leads all other major studios in number of 3-D pictures in the planning stage—five features in all at this writing.

RKO-Radio—Early last month, RKO acquired the original Norling 3 D camera, considered by many the ideal stereo camera, inasmuch as it was engineered especially for stereoscopic motion pictures, and was not "built up" from conventional 35mm cameras. Designed and built by J. A. Norling, of Loucks & Norling, New York, the camera incorporates many unique features, not the least of which is the prism arrangement for providing the variable interocular and divergence necessary for 3-D filming. Camera uses two films, fed from twin magazines, and has a binocular viewfinder which enables operator to see the scene in 3-dimension when the camera is racked-over to viewing position.

While studio has not yet begun production of a feature in 3-D, it sent its camera and crew, supervised by Mr. Norling, to New Orleans, Louisiana, to record scenes of the annual Mardi Gras for use in a forthcoming stereo feature.

Meantime, company reportedly is looking over 3-D cameras of other studios and of independents, with object of acquiring several for use in future RKO 3-D productions.

20th Century-Fox—Although this studio's major activity reportedly is concentrated in its CinemaScope wide-screen process, it also is entering 3-D film production. Sol Halprin, studio's executive director of photography, has developed a 3-D camera, details of which thus far have been kept under cover. Process is tradenamed Stereoscopic. Initial 3-D feature, "Inferno," in color, is being photographed by Lucien Ballard, ASC. Other features in 3 D are in the planning stage.

Universal-International—This studio has been the most secretive of all regarding its special 3-D camera as well as company's initial 3-D production, "It Came From Outer Space," being photographed in black-and-white by Cliff Stine, ASC. The stereo camera developed by studio engineers reportedly employs two Mitchell cameras mounted side by side, with one camera inverted to provide close setting of lenses in order to gain a minimum interocular distance. The camera is said to employ no mirrors, has selsyn motor control of focus, and boasts the advantage of providing a negative that makes possible daily prints with a minimum of delay. It is further reported that two different 3 D cameras are employed on the set—one for medium and long shots, the other for closeups.

Warner Brothers—This studio is employing one of the Natural Vision 3-D cameras in photographing its initial stereo feature, "House of Wax," being filmed in Warner-Color by

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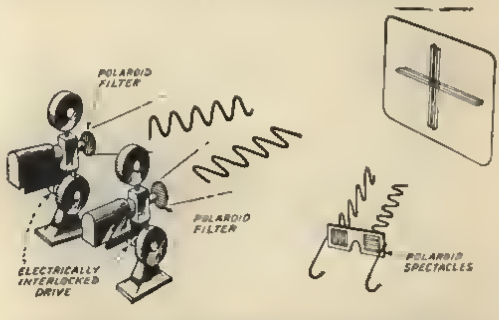


VISUALIZATION of the 3-D viewing system conventional for films shot with twin stereo cameras. Left and right images are projected through Polaroid filters onto a metallic screen, which is essential for exhibition of Polaroid 3-D pictures. Spectators must wear special Polaroid viewing glasses in order to observe the stereoscopic illusion on the screen.

EASTMAN

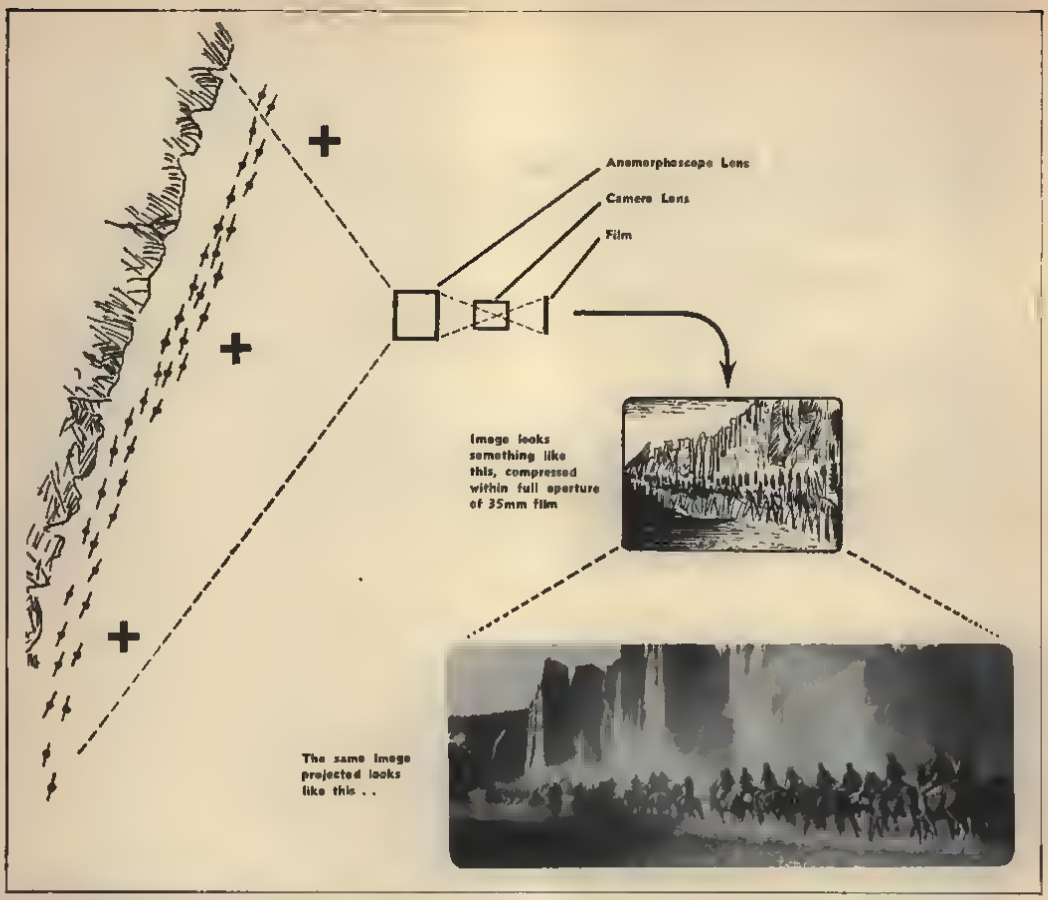
PROFESSIONAL

MOTION PICTURE

FILMS

W. J. GERMAN, INC.

Fort Lee Chicago Hollywood


Anamorphoscope Lens
Camera Lens
Film
Image looks something like this, compressed within full aperture of 35mm film
The same image projected looks like this . .

HOW CINEMASCOPE WORKS—Panoramic scene of marching Indians at left is photographed with an anamorphoscope wide-view lens in front of camera lens. This compresses image within the full aperture of 35mm film. In projection, another anamorphoscope placed before projector lens expands compressed image to full scale so it appears on screen as shown above, lower right. Three microphones (X) placed strategically to cover the full range of the set or scene record three separate tracks to provide stereophonic sound, an important factor in CinemaScope system.

CinemaScope--What It Is; How It Works

The only added equipment needed in CinemaScope filming is the special lens attached to a regulation camera plus two extra microphones, which pick up sound for the stereophonic sound system.

A UNIQUE LENS which restores to its proper proportions an image previously distorted, makes possible the compression onto 35mm film of wide-angle panoramic scenes, and is the basis of the new CinemaScope system of wide-screen motion pictures developed in Hollywood by 20th Century-Fox studios.

When the film is projected through a companion lens the distorted image assumes its former normal dimension, just as a trick mirror in a carnival fun house would straighten out its distorted reflections if placed before a mirror having compensating distortions.

CinemaScope is *not* stereoscopic movies—not the same as the 3-D films also causing a flurry in Hollywood. CinemaScope films do not require the use of viewing spectacles, do not require special dual motion picture cameras and dual projectors. But the result on the screen, which does present an *illusion* of three-dimension pictures, is said by many to be superior to 3-D films.

Like the Cinerama process, CinemaScope pictures are panoramic and have stereophonic sound. The wide screen

used for CinemaScope is a solid screen having great reflectance, and is curved slightly but not to the extent of the Cinerama screen

CinemaScope is a simple, inexpensive process applicable to either color or black-and-white films, which simulates three dimension to the extent that objects and actors seem to be part of the audience, while its stereophonic sound imparts additional life-like quality as it moves with the actors across the screen

From its panoramic screen, two and a half times as large as ordinary screens, actors seem to walk into the audience, ships appear to sail into the first rows, off-screen actors sound as though they are speaking from the wings.

CinemaScope is a simplified improvement of an anamorphoscope lens (which he called a Hypergonar) developed by Frenchman Henri Chretien with whom 20th Century Fox recently closed arrangements for its use and other patented improvements.

(Ed Note: Webster's dictionary defines anamorphoscope as: "A cylindrical mirror or lens which restores to its normal proportions an image distorted by anamorphosis")

The anamorphoscope is fitted before the regular camera lens and functions to gather up a wide field of view and funnel it, compressed, through the camera lens, leaving a distorted image of the scene on the film. In projection, a similar anamorphoscope placed before the projector lens unscrambles the image so that it reaches the screen exactly as filmed and completely without distortion.

In describing the Hypergonar anamorphoscope lens, Chretien said: "The Hypergonars which we have built are of two types. for photography, and for projection. They differ only in their dimensions and their mountings"

From the optical point of view, they consist of two separately achromatized systems: a converging system consisting of two lenses, cemented together, and a diverging system consisting of three lenses, cemented together.

In photography, focusing of the anamorphoscope is accomplished in accordance with the distance of the subject, by means of a spiral-shaped shaft and the help of a distance calibration. This does not alter in the least bit focusing of the camera lens.

In projection, Chretien explains, the Hypergonar is adjusted once and for all in accordance with the distance of the screen, by means of a helical rack and pinion. The interposition of the Hypergonar does not modify the definition on the screen.

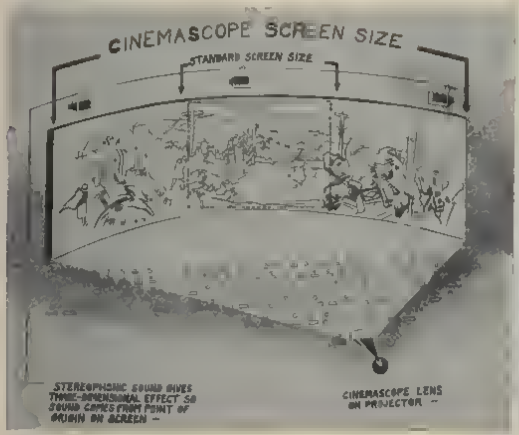
The loss of light occasioned by the introduction of the anamorphic attachments is insignificant, the inventor points out, because the consecutive interposition of only two supplementary lenses, i.e., the two Hypergonar units, consists of cemented lenses In addition, the exterior surfaces of the elements in each system are treated with anti-reflection coating. In projection, the screen brightness is reduced proportionately to the enlargement of the anamorphic attachment, since there is a larger screen area to light, and not in proporiton to its square (as would be the case where the image were enlarged in all directions)

CinemaScope requires only one camera for filming and one machine for projection on the screen. It utilizes the same cameras and projectors now standard in all studios And because the anamorphoscope lenses can be adapted to all makes of 35mm cameras, 20th Century-Fox expects to make the CinemaScope system available to all motion picture studios.

CinemaScope poses few problems for the director of photography. Use of the

(Continued on Page 131)

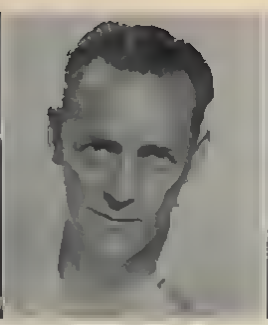
HOW CLOSEUPS WILL BE COMPOSED in CinemaScope wide-screen photography. Tight closeups will probably be avoided in favor of head-and-shoulders composition, with the figure or figures placed a little to the left or right of center of the frame, as in this sketch of a scene for "The Robe," 20th-Century-Fox's first CinemaScope production.


CINEMASCOPE SCREEN SIZE
STANDARD SCREEN SIZE
STEREOPHONIC SOUND GIVES THREE-DIMENSIONAL EFFECT SO SOUND COMES FROM POINT OF ORIGIN ON SCREEN
CINEMASCOPE LENS ON PROJECTOR

PROJECTION OF CINEMASCOPE movies requires but one projector. Screen is curved slightly and fills entire stage proscenium. Three speakers—one in center and one of either side of screen (i.e., behind it) reproduce the stereophonic sound track, lending added naturalness and dimension to CinemaScope movies

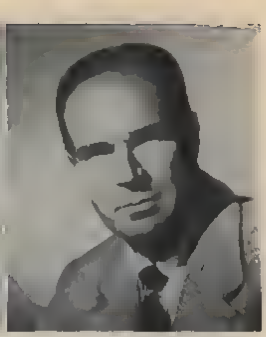
ONE OF THOSE most instrumental in the perfection of Twentieth Century-Fox's CinemaScope process is Sol Halprin, ASC (center) studio's executive director of photography. Assisting him were (l to r) Lorin Grignon, sound engineer; Wm. Weishait, chief projectionist, Grover Laube, camera engineer, and Carl Faulkner, sound department

ROBERT L. SURTEES, ASC,
"The Bad And The Beautiful"

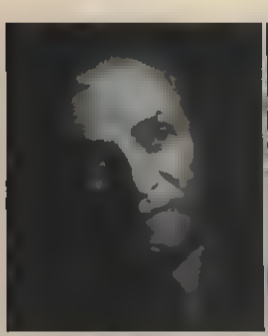


RUSSELL HARLAN, ASC,
"The Big Sky"

JOSEPH LaSHELLE, ASC,
"My Cousin Rachel"

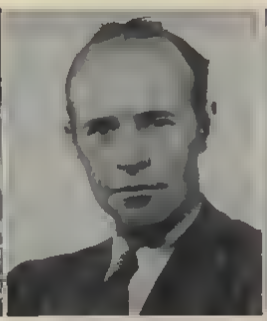


CHARLES B LANG, JR., ASC,
"Sudden Fear"



VIRGIL MILLER, ASC,
"Navajo"

HARRY STRADLING, ASC,
"Hans Christian Andersen"



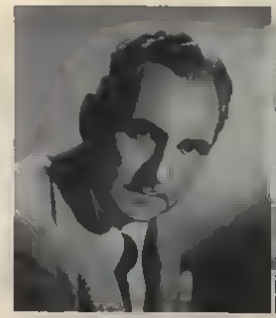
GEORGE FOLSEY, ASC,
"Million Dollar Mermaid"

WINTON HOCH, ASC,
"The Quiet Man"

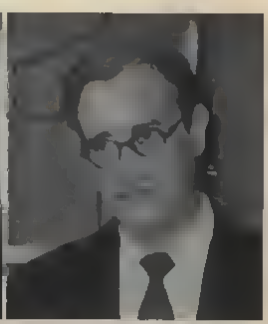
Nominees For 1952 Academy Awards

Ten A.S.C. directors of photography nominated for achievement awards for year's best camerawork.

By FRED W. JACKMAN, ASC



LEON SHAMROY, ASC,
"The Snows Of Kilimanjaro"



FREDERICK A. YOUNG, ASC,
"Ivanhoe"

TEN DIRECTORS OF PHOTOGRAPHY are in the race this year to receive the gold "Oscars" for photographic achievement to be presented this month in Hollywood by the Academy of Motion Picture Arts and Sciences. Of these, nine are from Hollywood and one from London, England. Of the twenty film productions mentioned here last month as having been selected by Academy members as candidate entries for photographic awards, five black-and-white and five color productions have been chosen in the nominations balloting.

While it is the productions themselves that are voted upon by the Academy, it is the directors of photography to whom the awards are presented the evening "Oscars" are handed out at the Pantages theatre in Hollywood in gala presentation ceremonies.

The ten productions nominated for photographic achievement awards and the cinematographers who photographed them are as follows:

(Continued on Page 126)

Photographing the celebrated Columbus Boychoir and Founder-Director Huffman in action, with the Maurer "16"

From Maine to Texas

. . . MUSIC STRANGELY SWEET

A glorious twentieth century American cultural accomplishment is the founding, training and development of the Columbus Boychoir. Singing to packed houses in America's finest concert halls, and in hundreds of cities and towns throughout the land, "America's Singing Boys" are bringing the joy of music to millions

"Movies, records and radio have brought our story to the public thousands and thousands of times, "says Founder Director Herbert Huffman, "Now we want a record of our own, so we bought the finest camera we could find, the Maurer '16' "

THE MAURER 16MM., designed specifically for professional use, equipped with precision high power focusing and view finder. Standard equipment includes: 235° dissolving shutter, automatic fade control, view finder, sunshade and filter holder, one 400-foot gear driven film magazine, a 60-cycle 115 volt synchronous motor, one 8-frame handcrank, power cable and a lightweight carrying case.

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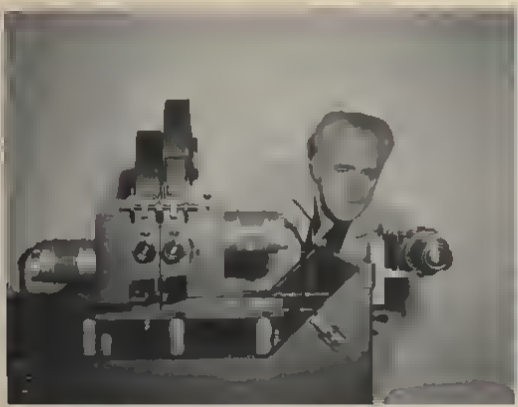
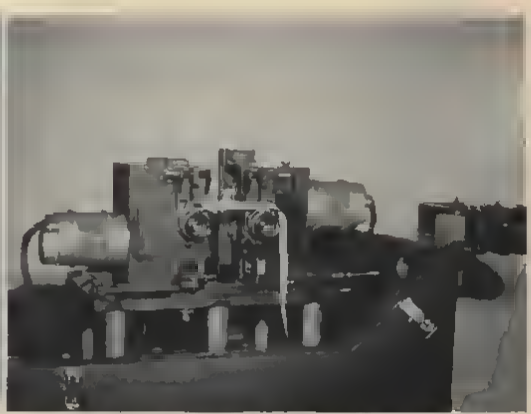
maurer *means finer motion pictures!*

PRODUCERS SERVICE CO's 3-D motion picture camera was specially engineered for 3-D photography, is extremely compact and light in weight. Side view shows twin film magazines, lower section of blimp.

FULLY BLIMPED camera, showing external controls for focus, and the Mitchell-type finder. Beside camera is cinematographer-technician Gordon Pollock, ASC, who collaborated in designing the camera.



RANGE of camera's interaxial is illustrated in photos above and at right. Interaxial is changed by moving cameras laterally. Here cameras are shown at minimum position, giving an interaxial of 1.9 inches.



CAMERAS adjusted to extreme interaxial of 4.5 inches. Here film magazines have been removed. Shafts extending through blimp at right control interaxial and convergence of the cameras.

Producers Service's 3-D Camera

New professional stereo camera has no mirrors, records R and L images on separate negatives that require no reversals or optical correction.

FOR COMPLETELY SATISFACTORY stereoscopic motion pictures having the usual range of long, medium and close-up shots, the ability to vary the interaxial distance between lenses of 2-camera stereo photographic systems is essential. While most all cameras presently in use today provide for this, not all have the ability to go below the established norm of 2½ inches, which is necessary in order to photograph scenes and subjects at close range completely free of eye-straining distortion.

This is because in most cases 3-D camera equipment has been built by utilizing two conventional motion picture cameras which, because of certain physical characteristics, do not permit adjusting the lenses closer than 2 or 2½ inches. Obviously, this will be corrected in time, chiefly in the design and construction of cameras especially for stereoscopic motion pictures.

One of the first such cameras is that engineered by Producers Service Co., Burbank, Calif., well-known for having developed some of the most important equipment now in use in motion picture studios. To date, both theoretical analysis and experience have indicated a need of a wide flexibility in the interaxial and convergence variables of 3-D cameras, and especially of a precision of adjustment and film registration equal to that which must be attained in 3-strip

(Continued on Page 130)

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THE NEW MAGNESOUND attachment converts present Victor 16mm sound projectors to magnetic sound. Conversion is quick and simple. The regular optical sound drum is removed from projector and the Magnesound drum (arrow) inserted in its place. Magnesound amplifier and microphone, which complete the unit, are shown at right. There is no impairment of projector, it is readily re-converted to optical sound.

Magnetic Sound For Victor S.O.F. Projectors

New Magnesound attachment converts present Victor 16mm sound projectors for recording and playback of magnetic sound.

By JOHN FORBES

THE ADVENT OF MAGNETIC SOUND for 16mm films has resulted in the recent introduction of new, combination 16mm magnetic recorder-projectors, which enable anyone to record and play back sound on 16mm films without the need of costly laboratory processing of the sound track. However, it has remained for Victor Animatograph Corporation to bring out an attachment which enables any owner of a Victor 16mm sound projector to convert it for recording and play-back of magnetic sound, at a cost way below that of a new magnetic recorder-projector.

The Victor attachment, tradenamed Magnesound, sells at present for $199.45 complete with microphone and carrying case, which is considerably lower than the price presently asked for the new magnetic recorder-projectors. It records and reproduces both voice and music on 16mm films stripped with magnetic sound tracks. The sound can be recorded, erased and rerecorded as desired, as is common with most magnetic recorders.

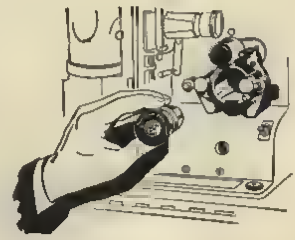
Illustrated here is the complete Magnesound unit attached to a conventional Victor 16mm sound projector. The arrow points to the Magnesound drum, which replaces the regular optical sound drum and exciter lamp of the projector—a simple operation pictured in detail in the illustrations below. The optical drum and components are easily removed simply by releasing a set screw; then the Magnesound unit is slipped into place, the set screw tightened, and the projector is ready for magnetic sound recording and reproduction.

The Magnesound attachment consists of recording amplifier with a simple control panel, the Magnesound replacement drum, and microphone. In use, the Magnesound amplifier is interconnected with the projector sound system by a convenient lead which plugs into the phono jack of the projector.

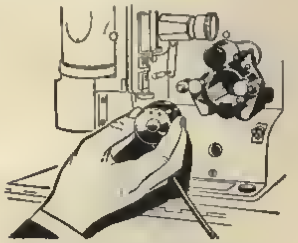
The Magnesound amplifier is as easy to operate as a radio or phonograph. Two knobs—one for determining volume for the recording, the other for selecting record and playback positions—are the only controls needed to operate the unit. A recording "eye" indicates proper recording level. A safety device guards against unintentional erasure of a recording.

With a Magnesound attachment on your Victor sound projector, you can record your own sound on any films you may now own having optical sound tracks, you can record sound on existing *silent* films; and you can record sound on any new film that you may make. In all instances you must first

(Continued on Page 124)



STEP 1—Release set screw, remove optical sound drum and exciter lamp from your Victor sound projector.



STEP 2—Replace with Magnesound drum, tighten set screw—and the attachment is installed, ready for use.

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THE STEREO attachment for the Bolex DeLuxe H-16 camera replaces the regular camera lens, provides adjustment for convergence and setting of f/ steps. A special mask is also provided for viewfinder. Attachment may be used only on Bolex cameras

TO PROJECT 3-D movies made with the Bolex camera, a special lens is provided for the projector. The attachment may be used with almost any 16mm sound or silent projector

Cine Amateurs Can Make 3-D Movies, Too

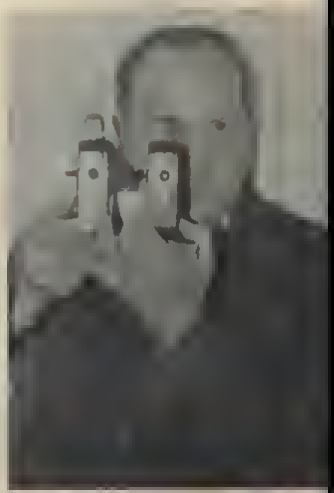
By PHILIP TANNURA, ASC

NOW THAT HOLLYWOOD has gone all out for stereoscopic movies, there is a flurry of interest in 3-D on the part of amateur movie makers everywhere. The interesting thing about this new movie innovation is that any amateur cine filmer with 16mm equipment can make three dimension movies, too—and many have been for some time. Some explored the intricacies of stereo cinematography and projection years ago, building their own equipment for both taking and showing three-dimension motion pictures.

Today, equipment for 3-D home movies is ready-made for the amateur. Prominent is the equipment of Paillard Bolex and the Nord Company, both of which previously were announced in the pages of *American Cinematographer* and other photographic publications.

To make and show three-dimension home movies two accessories are required: (1) an optical "scene splitting" device for the camera lens, and (2) a similar attachment for the projector. Of the two systems mentioned above, the Bolex is perhaps the most extensively engineered (It is the more expensive of the two). The Bolex unit for the camera is actually a lens, which replaces the regular taking lens of the camera. Properly termed, the unit is known as the Bolex Stereo Yfar f/2.8 taking lens. It may be used only with the Bolex DeLuxe H-16 camera.

It consists of a pair of fixed-focus lens elements rated at f/2.8 set at the rear of a housing having the two openings at the front through which the scene is recorded as twin images and transported through the optical system to the film. On the film the twin images have a vertical format, each about a half a frame in width and a full frame in height. Lining up and viewing the 3-D scene is accomplished through the Octameter finder, which is adapted for stereo filming by offset



DR. O. H. GRIST, Glendale, Calif., eye specialist, built his own stereo movies equipment, using two Eastman 8mm cine cameras interlocked mechanically for photography. To project the films, he rigged up twin 8mm projectors, as pictured at far right

brackets and a simple, slip on stereo mask

A knurled knob controls the precise setting of diaphragms of both lenses, which have a range of from f/2.8 to f/22. The attachment permits shooting 3-D movies of subjects from 5 feet to infinity. A closeup attachment, now being developed by Paillard, will be announced shortly. Either 16mm color or black and white film may be used, the lens is said to be fast enough for limited color photography at night.

To project stereoscopic movies, Bolex provides a special twin projection lens unit, which replaces the regular projector lens. Unlike with the taking lens, the Bolex stereo projection lens may be used with almost any 16mm sound or silent projector. Two knobs on the lens provide focusing and alignment adjustment—simple as focusing the conventional projector lens.

To screen stereo movies which require Polaroid viewing glasses, a metallic silver screen is required. This is usually coated with a fine grade of aluminum paint. A metallic screen is necessary for all stereo projection, because any other type depolarizes the light and renders the 3-D images void.

Bolex offers a complete outfit for making and projecting 16mm stereo movies for $397.50. This includes the taking lens, the projection lens, metallic screen and two pairs of Polaroid viewing glasses. Additional viewing glasses are available at small cost.

Perhaps the first to introduce a practical system for making and showing 16mm stereoscopic home movies was the Nord Company, Minneapolis, Minn., whose equipment was described in detail in the February, 1952, issue of *American Cinematographer*. The Nord equipment is attached to the camera by means of a bracket which fastens to the tripod socket. The unit will enable one to make 3-D movies with practically any make or model 16mm camera having a one-inch lens. When shooting, the regular camera viewfinder is not used. The scene is lined up through the reflex finder on top of the Nord Camera Converter.

Since the camera unit does not attach to the lens itself there is no problem of adapters; nor does the speed of the lens or size of the barrel affect the use or mounting of the unit.

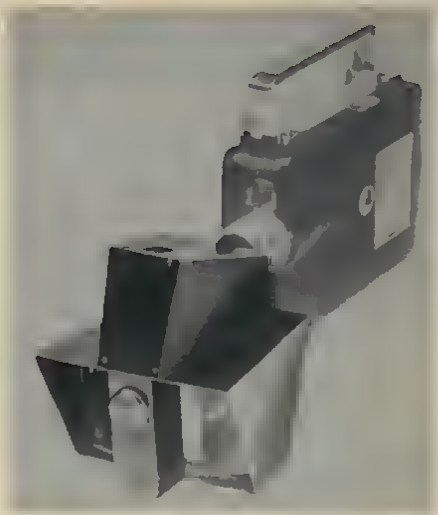
The bracket is a machined aluminum casting, and is universally adjustable so that with the aid of a screw driver it can be adjusted to suit any make of equipment. In fact, the only part of the entire kit which is "special" is a small clip used to guide the side of the camera so that the lens always points directly into the optical head.

This new camera unit should not be confused with any of the devices tried in the past, which used mirrors to separate the images to form a stereo pair. The principles employed are quite new and involve several optical wedges which are achromatized.

The camera lens, looking through this optical head at a scene, records two images which correspond to the right eye and left eye views required for a true and accurate 3rd dimension movie. These twin-picture images are recorded on the film side by side in the space normally occupied by a standard single frame image.

Since the entire stereo unit attaches to the camera in the same way that the camera would be mounted on a tripod, it can readily be attached or detached as occasion demands and there is no machine work or alteration required on the

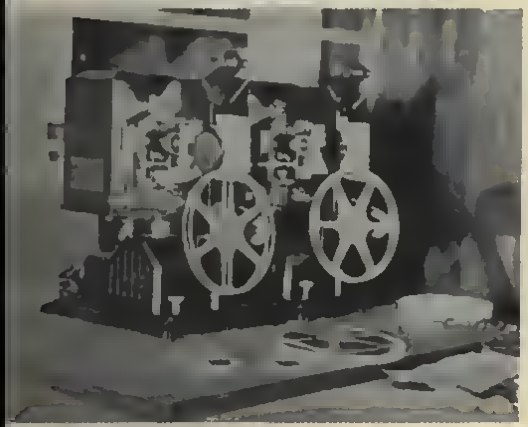
(Continued on Next Page)



THE NORD STEREO ATTACHMENT for cine photography is called a 'converter.' This is attached to camera by means of bracket fastened to tripod socket. Camera viewfinder is dispensed with, and pictures are lined up through the reflex viewfinder in top of converter.

NORD converter unit mounted before projector. A special screen of vertical format, and special Polaroid viewing spectacles complete equipment necessary for viewing stereoscopic home movies.

DR. GHRIST mounted two 8mm projectors on a baseboard and interlocked them by mechanical linkage so they would turn with the shutters opening and closing in unison. Right and left images were projected to metallic screen through Polaroid screens mounted before either lens.



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AMATEUR 3-D MOVIES

(Continued from Preceding Page)

camera itself It can be used with the camera either hand-held or mounted on a tripod With the unit in place stereo movies are made in the same way that has always been employed for flat movies. In fact, the only difference is that you increase exposure by ⅔ stop. just as if you were using a filter The camera unit may be used with black and white or color film, and the processing is unaffected.

Projection of the stereo films involves the use of the Nord Projector Converter. This is an optical unit housed in a metal case and supported on an independent base. so that it is unnecessary to attach the unit to the projector at all

In use, the projection unit is placed on the same table with the 16mm projector at a distance of approximately one foot ahead of the projection lens. The beam of light passes through this unit on its way to the screen The exact position of the unit is not particularly critical The projection unit does two things It polarizes the light independently for the right- and left-hand images and at the same time it overlaps these images in correct registration. Two simple adjustments are provided so that by turning two knobs the images can be aligned independently in both the vertical and horizontal positions. Ordinarily once these adjustments are made for a particular projector they need not be repeated unless, of course, the settings are disturbed between showings.

As viewing 3-D movies with the Nord equipment requires the spectator to wear Polaroid glasses, the same as with Bolex 3-D movies, a metallic screen is also required for projection

Interesting is the fact that the Rivoli Theatre in New York City is presently using the Nord Projector Converter to screen a program of 16mm stereoscopic movies which was made especially for this theatre The unit reportedly provides maximum theatre quality of the screened pictures, which are projected by a 16mm high intensity arc projector.

The complete Nord 3-dimension movies kit includes the camera unit, the bracket with whatever clip is required for your particular camera, the projection unit with supporting base, test film, two pair of cardboard type Polaroid glasses and a special screen. Price is $83.50.

Long before either Nord or Bolex offered equipment for making 16mm 3-D movies, several ambitious amateur movie makers successfully built equipment for photographing and screening 3-D films One of the most notable developments in this field, perhaps, was that of Dr. O E. Ghrist, a Glendale. California, eye specialist

Dr. Ghrist first demonstrated his equipment back in 1938. Notable is the fact the equipment was designed for 8mm movies

Mr. Ghrist used the same polarized light principles that have been successfully displayed both by amateur and professional in the 16mm and 35mm fields It is believed his 8mm adaptation is the most successful yet from the standpoint of simplicity, cost of equipment, and cost of producing stereoscopic home movies

Two Cine-Kodak eights, Model 20, were used by Dr Ghrist in photographing his stereo pictures. The two cameras were mounted on a common base, far enough apart to permit access in loading and winding the two machines, as pictured in the accompanying photographs Through the base ran a shaft, to which a cog was rigidly attached to each end. The cogs protruded out of the base far enough to mesh with a large cog which was part of the camera motor mechanism

An opening was cut into the bottom of each camera to afford access to the winding gear and subsequent connection with the external gear and shaft. The cameras were then bolted to the base, with each winding gear in mesh with the external gear and shaft, thus effecting positive synchronization of the two cameras.

Since the two cameras were thus locked in mechanical sync, one starting button was left permanently "on." The two cameras were started and stopped by the control button on the second camera

In projection Dr. Ghrist employed two 500-watt Eastman projectors locked in sync by means of a shaft and universal joint connecting both machines. Suitable Pola screens were placed before each projection lens, and the spectator wore Polaroid glasses to view the pictures, the same as with 3-D movies today. The regulation metallic screen was, of course, used for projection.

Although Dr. Ghrist successfully achieved stereoscopic 8mm movies more than fifteen years ago, he has never lost interest in this phase of movie making Being among the first photographic hobbyists to take up movie making, Dr. Ghrist continues one of the most avid of non-professional movie makers

In the beginning it was his interest in displaying pictures of the physical structure of the human eye that led him into research of 3-D movies as a means of presenting his subject even more

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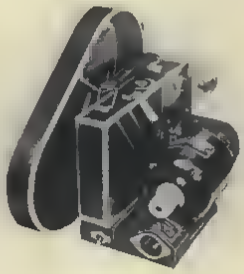

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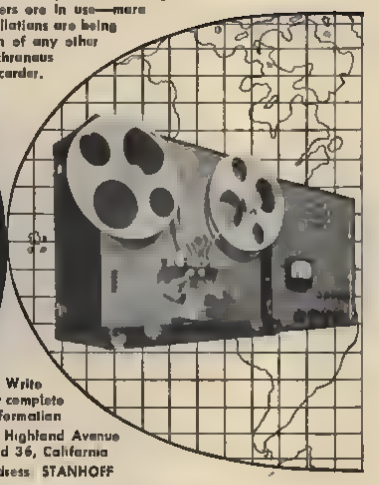

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realistically Today, he is completing work on more advanced 3-D movie equipment. This he hopes to announce to the public within a few months

In the meantime, many another serious cine amateur is bound to be inspired by the new pictorial thrill which stereoscopic movies afford Already there is considerable interest manifest in the commercial equipment for 3-D home movies, described earlier, and it is likely that there will be a great many home made 3-D adaptations taking shape before long. Putting together equipment for making and showing stereo movies is an interesting and challenging project for any avid cinebug looking for new fields to conquer

MAGNETIC SOUND

(Continued from Page 118)

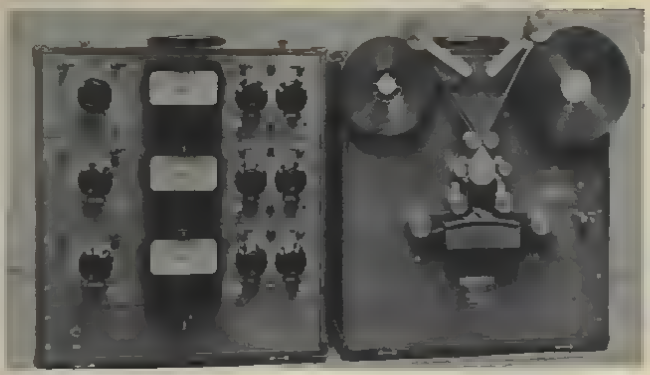
forward your film to a laboratory for an inexpensive application of the sound stripe on edge of the film This is a narrow ribbon of magnetic iron oxide coating. This coating or sound-striping service is offered by Eastman Kodak Company, Bell & Howell Company, and by Reeves Soundcraft Corp., New York, N. Y. In all instances, the 16mm film to be coated must be single-perforated —that is, having sprocket holes on but one edge of the film. In the case where you wish to add sound to your old double-perforated 16mm films, it will be necessary first to have dupes made on single-perforated stock, and then have the film striped for magnetic recording.

The application of a magnetic track to existing sound films having an optical track, does not impair use of the optical track, so that it is possible to play back either track as desired.

Magnesound will record or playback at either 16 or 24 fps, making it possible for you to add sound to movies shot at either sound or silent speed

Because the recordings are made while the film is projected, absolute synchronization is assured After recording sound, you simply reverse or re-thread the projector and play back the sound immediately. Editing of sound track is simple, too; you can re-record any number of times on the same film. In short, recording procedures are essentially the same as for all average home tape recorders.

In offering the Magnesound attachment to owners of Victor 16mm projectors, Victor Animatograph Corporation has taken an important step forward in making simple sound recording available to the average amateur movie maker. Attractive is the fact one does not have to dispose of his present Victor



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sound projector in order to obtain the advantages of the newer, simpler magnetic sound. He retains his equipment and simply improves it with the Magnesound attachment

This is in line with the oft-expressed wishes of so many amateur movie makers for simple, low-cost magnetic recorder-playback equipment that would provide synchronized sound for amateur movies—both 8mm and 16mm—in conjunction with their present silent projectors Perhaps this is just around the corner. Victor's Magnesound it is believed, is bound to stir up some sound thinking along this line among other equipment manufacturers. In the meantime, if you own a Victor 16mm optical sound projector, magnetic recording of sound for your home movies can now become a reality END

A new camera control system which permits motion picture cameras to be cut in and out of line as needed during the filming of TV shows has been developed by Ferenz Fodor, Filmcraft Productions, Hollywood.

Although no prizes or trophies are offered by the Edinburgh Film Festival, the certificates awarded to all films selected for showing is esteemed a high honor.

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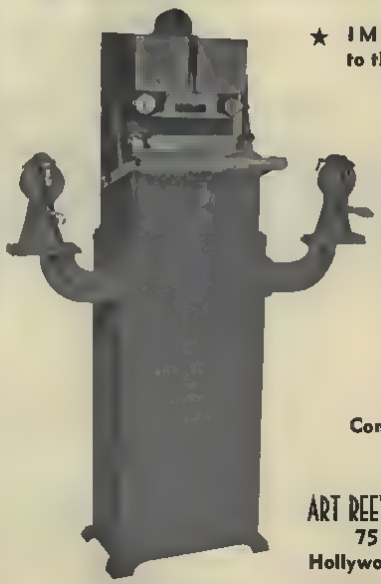

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1952 AWARDS NOMINEES

(Continued from Page 114)

BLACK-AND-WHITE PRODUCTIONS

"The Bad And The Beautiful," (MGM) Robert Surtees, ASC.

"The Big Sky," (Fox), Russell Harlan, ASC.

"My Cousin Rachel," (Fox), Joseph LaShelle, ASC

"Navajo," (Lippert), Virgil Miller, ASC.

COLOR PRODUCTIONS

"Hans Christian Andersen," (Goldwyn), Harry Stradling, ASC.

"Ivanhoe," (M G M), Frederick A Young, ASC.

"Million Dollar Mermaid," (M G M), George Folsey, ASC

"The Quiet Man," (Argosy-Republic), Winton Hoch, ASC.

"The Snows Of Kilimanjaro," (Fox), Leon Shamroy, ASC

Of the ten cinematographers, six have previously won awards for photographic achievement For his outstanding photography of MGM's "King Solomon's Mines," Robert Surtees won an "Oscar," a Look Award, and a Golden Globe Award in 1951 In 1952, he won his second Golden Globe Award for the color photography of "Quo Vadis" which he co-directed with William Skall, ASC.

Joseph LaShelle won an "Oscar" in 1944 for the photography of "Laura."

Charles Lang, Jr., garnered his initial "Oscar" in 1933 for the superlative photography of "Farewell To Arms."

Harry Stradling joined the "Oscar" winning ranks in 1945 when he won an award with his photography of "The Picture Of Dorian Gray."

If Winton Hoch captures an "Oscar" in the color films class this year for his lensing of "The Quiet Man," it will be his third. He won his first in 1948 for "Joan Of Arc," and repeated the following year when his artful color photography of "She Wore A Yellow Ribbon" easily won him an Academy award for photographic achievement

Leon Shamroy leads the roster of contenders this year with a total of three "Oscar" statuettes on the mantle in his home. These were won by him in 1942 for "The Black Swan," in 1944 for "Wilson," and in 1945 for "Leave Her To Heaven" In this respect Shamroy is tied with Arthur Miller, ASC, who also has won three "Oscars" for photography. Should Shamroy win an award for "The Snows of Kilimanjaro" this year, he will become the leading "Oscar" winner among cameramen—the only one to have won four Academy awards Previously, Shamroy won a Look Award in 1944 for the photography of "Wilson," and another in 1950 for photography of "Twelve O'Clock High"—both Fox productions.

Frederick Young, of London, England, is the sole foreign contender this year; it is the first time one of his pictures has been nominated for an Academy award for photography.

The respective merits of the photography of the ten nominated productions will be the subject of much discussion and no little controversy during the next few weeks which precede the final voting and awarding of the Oscar trophies at the Academy's gala presentation ceremonies. This will take place at the RKO-Pantages theatre in Hollywood the night of March 19th.

The selection of films for the Academy's annual Cinematography Awards begins each year with the cinematographers themselves. The first of January, each director of photography in the Hollywood motion picture industry is invited by the Academy to enter one black and white production and one color production on which he has received single or joint screen credit. Titles of these films are included on a preliminary or "primary" ballot, which is then sent to all directors of photography in the industry. In addition, each director of photography must submit any one eligible black-and-white and one eligible color foreign production which he deems worthy of Awards consideration. Thus, foreign-made films have a chance to compete with Hollywood films for "Oscars."

On receipt of the preliminary ballots, each director of photography then votes for ten or less productions in each classification, in the order of his preference. The twenty productions receiving the greatest number of votes are then screened by the Academy to give all directors of photography opportunity to see these productions under the same conditions.

Following these screenings, a nomination ballot, listing the ten black-and-white and ten color productions is sent to all directors of photography with instructions to vote for not more than five in each classification in the order of preference. The five productions in each class receiving the highest number of

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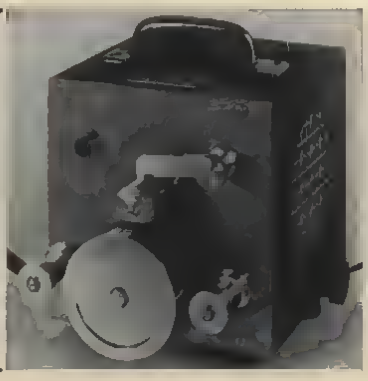

votes are nominated for the cinematographic awards.

Directors of photography are eligible to vote in the preliminary voting and nomination voting. Only Academy members participate in the final voting which selects the best film in each class for the photographic achievement award. Here, for the first time, the voting is not confined exclusively to directors of photography, but is participated in by members of all branches of the industry who are members of the Academy.

When the Academy of Motion Picture Arts and Sciences was founded in 1927, one of its expressed purposes was that of "encouraging the arts and sciences of the profession by . . . awards of merit for distinctive achievement." In undertaking this project, the Academy founders were moved by a desire to dignify the film medium as a whole. Today, hardly anyone would dispute the contention that with the exception of the press, motion pictures stand as civilization's most important medium of popular entertainment and education. One manifestation of this interest is the remarkable number of organizations which, over the years, have followed the Academy's lead in honoring the achievements of film-makers. However, Oscar—the gold statuette awarded annually by the Academy — remains the most respected and sought-after trophy of them all.

Ballots for the final vote were mailed to approximately 1700 qualified Academy member-voters on February 24th, with deadline for balloting set for March 10th. Ballots will be tabulated by a prominent Los Angeles accounting firm, and the results kept secret until that eventful March evening when they will be revealed to the world at the Academy's presentation ceremonies. END

PRACTICAL FILMING TECHNIQUES

(Continued from Page 107)

the frame. It is disturbing to cut on a shoulder or to have the hands of the players going in and out through the frame, which in 3-D has solidity.

In three-dimension films, the eye scans the scene much more than in the flat picture. For this reason it is desirable to have as much definition and depth of focus as is possible. For the same reason excessive contrast and empty shadows place a hardship upon the spectator who automatically is trying to analyze every part of the picture.

Much of the present technique can be retained in 3-D cinematography. Boom shots, pan shots, travel shots and such can be used to good advantage where provision for follow focus and lens con-

version on the principal objects of interest is accommodated. As the spectator is constantly adjusting his vision to each scene, it is good practice to plan sequences so as little cutting from one scene to the other is necessary. Dolly shots eliminate many of these quick cuts and are therefore suggested. While the camera must be level laterally, there is no objection to tilting it up or down.

It is interesting to observe the audience participation in such scenes as those made from a roller coaster, tilting forward or backward as it helps the illusion in this type of scene. In long shots it is well to include more of the foreground than is usual with flat pictures. This provides an unobtrusive depth effect. Scenes made from parallels or other high set-ups preclude this foreground effect and should be avoided where possible.

In due time, better adjusted and therefore more comfortable Polaroid glasses will be available to the moviegoer as more 3-dimension films become available. In fact, prescription viewing glasses of the clip on type having Polaroid stereo lenses will be worn by those who ordinarily need glasses so that they may more fully enjoy the thrills of the realistic presentation that this medium will bring. As we learn to make 3-D productions without distortion and mechanical errors, the present objection to glasses will be overcome. It is reasonable to believe that comfortable glasses are no more objectionable than viewing a film through the windshield of a car at a "Drive In."

What about process shots, matte shots and some of the other special photographic effects we presently use? On the whole, rear-projection process can be used for 3-D films much as at present. Most plates or "keys" contain only distant objects. The foreground objects will be placed in front of the screen as usual and photographed with the 3-D cameras. In most cases this arrangement will reproduce satisfactory results. Straight side-angle plates from moving cars may take preference to say, three-quarter angles because in the former there is a natural separation of the angle of view between successive frames that correspond to the 3-dimension camera. Where present process cannot be used, double Polaroid projection plates with filters on the cameras and projectors, or the traveling - matte - color - separation method for each film can be utilized.

The usual matte painting concerns only distant vistas with small divergence or depth. In these cases, the same painting can be used for each film. Those cases where portions contain middle distant trees, buildings or other objects, will be repainted in proper perspective

(Continued on Page 138)

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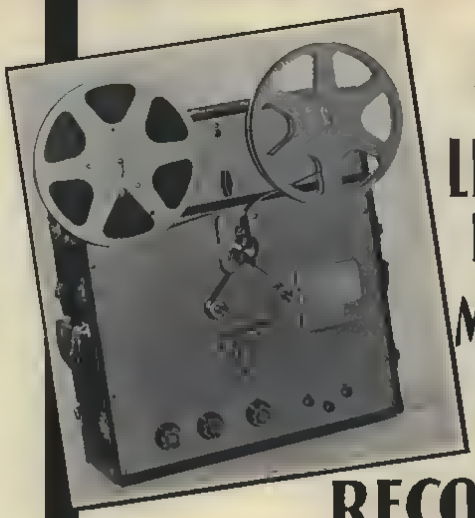

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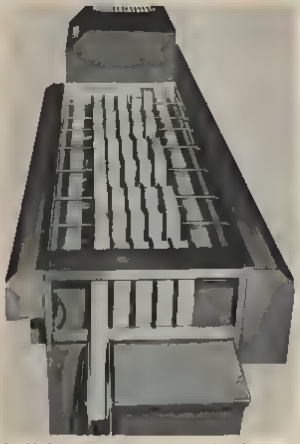

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3-DIMENSION CAMERA

(Continued from Page 116)

color cameras It is on this basis that Producers Service engineers have proceeded in the design of their 3-D camera.

Pictured in the series of photographs on this page, the PS 3-D camera is compact in size and moderate in weight, providing the flexibility needed in feature film production The two cameras, actually film transport and recording units, are specially designed and constructed around Cunningham camera movements, well known for precision and accuracy in performance over a long period of use. The assembly resembles two conventional cameras mounted side by side in that the two housings are so mounted, affording close positioning of the lenses—so essential to obtaining a minimum interaxial distance Each unit carries its own 1000-ft. film magazine mounted at the rear; magazines are readily demountable and interchanged

To facilitate loading and threading, one camera is hinged at the base, allowing it to be tilted forward This permits access to the film gate and sprockets, located on the side adjacent to the companion camera. Instead of the conventional hinged camera floor, the door on either camera consists of a sliding panel fitted to grooved tracks of close tolerances.

The camera affords a range of interaxial from 1 9 inches to a maximum of 4½ inches To vary the interaxial, one camera is moved laterally on a calibrated base by means of a geared shaft extending through side of blimp and fitted with a handle.

To vary the convergence, the opposite camera is toed-in as required by means of a second crank outside the blimp controlling a geared shaft leading to the camera base. Here an important innovation has been worked out which enables the operator to observe and check convergence through a finder system that involves two mirrors operating much the same as the conventional range finder. Thus it is never necessary to check convergence directly through the camera lenses.

Focusing of lenses is also done manually by means of a calibrated dial on side of the blimp. Eventually, this operation will be controlled by a Selsyn motor operating the coupled lenses in unison by remote control

Instead of the conventional focusing system whereby the lenses are screwed in and out of the camera mount, lenses are moved in and out of their mounts—i.e., toward or away from the film plane—by a precision cam and lever arrangement. The lenses, which are carefully matched, coated, and T-stop calibrated, are precisely registered in mounting to insure parallel exposures at all stops, and are mechanically coupled so that both lenses are set simultaneously By means of the external manual control and the calibrated dial, varying focus during follow focus shots can be a precise operation.

Driving the two cameras in synchronism are two Selsyn "slave motors" These are driven through a Selsyn generator powered by a 110 v, 50-60 cycle sync motor Generator and motor are in a separate housing and operate remotely, contributing further to the flexibility and light weight of the camera unit.

The fully blimped camera forms a compact and easy to handle unit for either studio or location use The sponge-rubber-insulated blimp is approximately 24" X 28" X 28", having a cover which is entirely removable to afford full access to camera.

The company points out that one of the chief advantages of its camera is the fact no mirrors are involved in the photography Each of the two lenses records the scene direct, making unnecessary any reversal of image or special optical printing. In other words, the camera delivers two negatives—one for the right and one for the left images—

having the same characteristics as those produced by conventional motion picture cameras in 2-D or "flat" cinematography. This is important, especially where Eastman or Ansco color negative is used because it makes it possible for laboratories to provide rushes a full day in advance over methods that require special printing of negatives.

Producers Service completed its first 3-D camera February 27th—the first of six scheduled for immediate construction. The cameras to follow will have several advanced features not incorporated in the first model. They will be smaller in overall size, have specially designed right and left film movements, and a focusing system synchronized for motor driven remote control follow focus. The finder on the new models will be a new improved reflex type having a brilliant aerial image of constant brilliance irrespective of the f/value, and will be parallax-free.

Credited with the major portion of the engineering is Jack Kiel, chief engineer of the company. Gordon Pollock, ASC, cinematographer, inventor, and camera technician of note, has been serving as consultant to Kiel. Pollock becomes Producer Service's stereo technician and chief cinematographer. The company will lease its 3-D cameras to both major and independent producers, with Pollock's services as director of photography and stereo technician included.

First producer to use the new 3-D camera will be Lippert Productions, scheduled to begin shooting its first stereo feature film the first week of March.

Soon to be completed by Producers Service is a 3-D camera of still another type, employing Bell & Howell cameras mounted at right angles and affording "zero" interaxial for miniature and special effects photography in three-dimension. This also will be a "service" camera for lease to studios as required.

CINEMASCOPE

(Continued from Page 113)

CinemaScope attachment on the camera, it is reported, does not alter the exposure time. One minor change, in addition to the auxiliary lens, will be that of enlarging the horizontal scope of the camera viewfinder so that it will be possible for the cameraman to see the actual area taken in by the anamorphoscope auxiliary in front of the camera lens. The wide-range viewfinder viewing glass will have two vertical cross hairs which delimit for him the field of the ordinary screen (or standard aperture) inside of which he may assemble the elements of action when it is desired to

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present the action in the ordinary manner.

Checking the scene directly through the lens will present something of a problem because what the cameraman sees through the lens will be an optically compressed scene, the same as will be registered on the film. Because the stereophonic sound tracks of CinemaScope films will be separated from the picture film, the picture will occupy the full width of the 35mm aperture. In most cases, the 3-dimension sound will be recorded on magnetic film, in three separate tracks, as picked up by three microphones placed strategically in or above the set.

Although closeups are reproduced dramatically in CinemaScope films, fewer may be needed because medium shots of actors in groups of three and four show faces so clearly that the most minute emotions and gestures are obvious.

In the beginning, it is likely that most CinemaScope productions will be basically outdoor spectacle dramas. This will go a long way toward solving the lighting problem—which undeniably will be great when it comes to shooting the large wide-angle sets indoors on the sound stage. Also, it is likely there will be less emphasis on effect lighting, admittedly not so important where films are shot in color.

CinemaScope poses a number of problems, too, for the film editor. One studio cutter said CinemaScope will make necessary a special horizontal enlarging lens for Moviolas, which will enable cutters to view CinemaScope film with the image fully unscrambled or rectified. Film cutting problems in the new medium, he said, will not be as great as was at first expected because there won't be as many cuts in CinemaScope films as with standard productions. C-pix will be like stage plays where the spectator visualizes closeups and medium shots when he focuses his individual attention on the principal player or some specific bit of action.

Where closeups are necessary, he went on to say, it is likely that these will be photographed with the player just a little to the right or to the left of the frame center—not too far to one side nor with part of the frame blacked out, as has been practiced in some other wide-frame systems.

The cutting of the stereophonic sound tracks, perhaps, will pose one of the greatest problems for cutters, for unless the scene is properly composed both for sound and picture, cuts may occur at the very highpoint of, say, dialogue coming from the extreme right of the screen, with sound for the succeeding cut jumping back to the extreme left of the screen.

In the beginning, film editors will

Anamorphoscope Lens Not New—Goerz-American Marketed One For 16mm Movies Back In 1931

LIKE STEREOSCOPIC MOVIES, which are now sharing the spotlight along with CinemaScope, wide screen movies are not a new discovery. As with stereo movies, they have simply been rediscovered after having been introduced publicly—about 20 years too early. The C. P. Goerz-American Optical Company placed on sale in the early thirties the Staats-Newcomer-Goerz "Cine-Panor" lens for 16mm movies, which the company stated then "takes and projects a 50% wider picture."

The lens was the development of Dr. Sidney H. Newcomer, a New York physicist and mathematician. Describing the lens in an article in the *American Cinematographer* for May, 1931, Fred Schmid, then vice-president of Goerz, stated: "This new lens consists entirely of cylindrical lens elements instead of spherical lenses of the regular photographic lens. It does not produce an image by itself, but has to be used in conjunction with the regular photographic lens of the camera when taking wide-field pictures. In the same way the same lens must be used in front of the projection lens when screening the films photographed with it. This same principle of producing wide-field screen pictures with standard 35mm cameras and projectors can be adapted for the professional screen as well by making the auxiliary lens system of suitable size. That it hasn't been done is most likely due to the uncertainty in the minds of motion picture producers whether, under present economic conditions in the motion picture industry, the time is opportune for introducing this new feature." (There was a depression on at that time, remember?—EDITOR).

Despite the potential promise it held, the Cine-Panor, it is reported, was withdrawn from the market shortly afterward due to some patent difficulties. It is understood, though, that Dr. H. H. Newcomer retains control of the same lens system for 35mm films.

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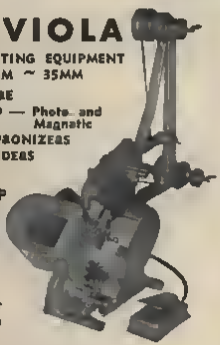

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have to feel their way cautiously, as indeed will all other technicians. There will be a greater need for unstinted cooperation between the production planners, the director, cameraman and cutter, in order to effect the smoothest possible result on the screen.

Of great importance to the viewer, there is no distortion of images in CinemaScope pictures from any seat in the theatre. Screens, specially developed for the new system for extra brilliance, may be any length desired to fit any theatre. The screen used for projecting tests at 20th Century-Fox studios is 64 feet wide and 25 feet high. A theatre like New York's Roxy would probably use one 80 feet long with proportionate ratio of height to width. The screen curves to a depth of five feet—enough to afford a feeling of engulfment without reflecting annoying highlight from one curved end of the screen to the other, as deeper curving screens are said to do.

Due to the immensity of the screen, few entire scenes can be taken in at a glance, enabling the spectator to view them as in life or as one would watch a play when actors are working from opposite ends of the stage.

Commenting on CinemaScope, following a series of test screenings at the studio, director of photography Joe MacDonald, ASC, said: "People will see things they've never seen before. When you look at CinemaScope it's like taking off blinders. It gives all the three dimensional feeling that people want. Every cameraman that I've talked to is enthused about CinemaScope because it will enable him to make a more substantial contribution to story-telling. Scenes will be longer and more intricate."

Supervising Art Director Lyle Wheeler had this to say: "Thanks to CinemaScope, sets will play a more integrated part in the picture than ever before. Just as on the stage, width, not depth, will represent the typical setup."

The sound implications of CinemaScope are as important as the visual ones, believes Lorin Grignon, 20th's sound engineer, who worked closely with Sol Halprin, ASC, and other studio engineers in perfecting the system. "In bringing stereophonic sound to the screen," said Grignon, "the illusion of reality will be conveyed to a degree never before realized."

Editors will be able to deliver smoother pictures with CinemaScope because scenes will be longer and there will be fewer cuts and closeups, according to 20th's film editor William Murphy.

It appears that CinemaScope will make special effects photography more important to film production than ever before. Matte shots will be widely used and there is the possibility that such

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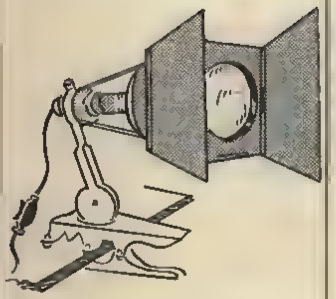

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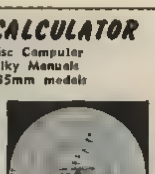

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shots will be the answer to the building of vast panoramic sets where the action must be staged indoors on the sound stage.

Ray Kellogg, who heads the special photographic effects department at 20th Century-Fox said, "With CinemaScope, special effects will bring greater realism than ever before To me, CinemaScope is more important to the industry today than was the advent of sound in its day."

CinemaScope is ideally suited to spectacle films in which most of the action can be played against huge outdoor panoramic vistas. Twentieth Century Fox has chosen "The Robe" as its initial production to be made in CinemaScope, which will be photographed under the direction of Leon Shamroy, ASC. As soon as the key sets are constructed, shooting will get under way, which will be about March 4 Shamroy has worked closely the past month with Sol Halprin, head of Fox's camera and laboratory departments, and the man most instrumental in the development of CinemaScope for the studio Exhaustive tests have proven the system perfect in every way, and according to a studio executive, all that remains to make CinemaScope an established big time thing in industry is volume production of CinemaScope lenses. Twentieth Century-Fox, which holds world rights to the system, except for France and its colonies, expects to have between 3,000 and 5,000 sets of CinemaScope lenses available before the end of 1953. END

ALL HOLLYWOOD STUDIOS SHOOTING 3-D FILMS

(Continued from Page 110)

Peverell Marley, ASC. A second production, "Burning Arrow," also to be filmed with a Natural Vision camera, is scheduled to follow completion of "House of Wax." Features of the Natural Vision 3-D camera are described elsewhere in this issue.

Warner engineers are also working on studio's own version of a 3-D camera, but are not prepared to make a statement regarding same at this time

Independents—Among the independent producers, Sol Lesser was the first to undertake a 3-D feature. Employing the stereo cameras of Stereo-Cine Corporation, Lesser started shooting at RKO-Pathe studios early in January The Stereo-Cine equipment is produced and leased by a corporation headed by Raphael G Wolff, Hollywood industrial film producer, and Sol Lesser (See *American Cinematographer* for February, 1953, page 60.)

The Stereo-Cine 3-D camera consists of two 35mm Camerettes mounted opposed on a base engineered by Richardson Camera Company, Burbank. Cameras record images reflected by twin angular mirrors, having micrometer adjustments for varying convergence Interocular spacing is controlled by turning knobs beneath each camera, which move cameras laterally as required. A single motor drives both cameras, insuring sync at all times. While cameras provide for viewing scene through taking lens during photography, precise alignment of cameras is provided by special loupes which fit in film gate of cameras when magazines are removed. A central Mitchell-type finder affords viewing scene by operator before and during camera operation.

Lippert Productions is scheduled to enter 3-D film production March 1st with an outdoor feature in black and white. Company will employ a new and hitherto unannounced 3-D motion picture camera, designed and manufactured by Producers Service, Burbank. complete details of which are to be found elsewhere in this issue Gordon Pollock, ASC. will direct the photography

Nat Levine, veteran Hollywood producer-distributor has set March 15th as the starting date for his first 3-D feature He will employ still another independently developed stereo camera— the Dunning 3-D camera engineered by Carroll and Dodge Dunning of Dunningcolor Corp., Hollywood.

The Dunning is a single camera having one film magazine carrying two negatives side by side, through a singly integrated camera movement and a fixed interocular spacing of 1.3 inches

The Dunning system has great portability Actual weight of camera is around 68 pounds, including motor and magazines, and the blimp weighs only 30 Camera employs no mirrors A twin-lens optical system operates in connection with an interlock which insures balanced frame by frame exposure of the two negatives A novel finder automatically combines the two stereo images into a single composite picture.

The Dunning 3-D camera thus becomes the fifth non-studio stereo camera to be developed and made available for feature film production. Others are: Natural Vision, Stereo-Cine, Norling, and Producers Service Still others will come to light in ensuing months—one we know of from a firm presently turning out 3-D equipment for home movies.

The cameras engineered by the major studios were, in most cases, not the re-

sult of overnight development, despite the sudden general plunge into 3-D film production Studio engineers have toyed with 3-D intermittently over the years. One example is Paramount, which designed and built a complete 3-D camera years ago and made successful stereoscopic motion pictures with it—only to have the project shelved and the equipment put away in mothballs. The idea was good, but it was just 15 to 20 years early in coming to fruition

Responsible for developing, testing and refining the 3-D cameras presently in use in the studios are such men as Jerry Rackett and Emil Oster, ASC, at Columbia; Loren Ryder, ASC, Farciot Edouart, ASC, Dr Charles R Daily, ASC. and Ferdinand Eich, ASC at Paramount; Mike McGreal and Fred Gage, ASC, at Warner Brothers, Sol Halprin, ASC, at 20th Century-Fox; John Arnold, ASC, at MGM. and Stanley Horsley, ASC, Fred Campbell, and Eugene E Polito, at Universal-International.

Aiding these men and other studio engineers working on 3 D equipment has been the Motion Picture Research Council, Inc The council opened its vast library of technical books and test films on stereoscopic motion pictures to the studio men At the same time, its own research work was accelerated. It put together a series of illustrated lectures which have been given before technical men of the studios as a guide to exploration and development in the new field Slides were shown illustrating the results that follow in 3-D cinematography under different conditions of convergence, interaxial spacing, composition, etc Thus, technicians were shown virtually what and what not to do in 3-D cinematography, without waiting to make mistakes in actual production.

Still another contribution of the Council is the design of a handy reference circular "slide-rule" type calculator, which enables 3-D cinematographers to get desired and correct answers to problems of convergence, interaxial distance, etc, in a hurry when shooting on the set or on location (Similar calculators also have been designed by the Polaroid Corporation, and by Raymond Spottiswoode, British stereo scientist and film producer.)

The third major contribution by the Council has been the setting up and publication of a proposed set of standards to be followed by exhibitors of 3-D films.

While the photography of 3 D motion pictures involves techniques little different than those followed in conventional film production, the cameraman and his assistants do need a comprehensive knowledge of the theory of stereoscopic photography, and must learn what is necessary in order to achieve satisfactory and distortionless pictures. In this

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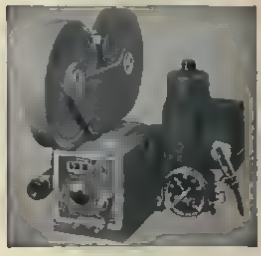

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respect, the calculators of the Research Council and the Polaroid Corp. are of inestimable value.

All of the directors of photography currently photographing 3-D features in Hollywood are seasoned studio cameramen, some with practical experience both in 3-D photography and technical development. Cinematographers credited with the photography of the 3-D features now in production are as follows: Lester White, ASC, Columbia; Bert Glennon, Warner Bros.; Peverell Marley, ASC, Warner Bros.; John Boyle, ASC, Sol Lesser; Karl Struss, ASC, Sol Lesser; Joseph Biroc, ASC, Arch Oboler; Paul Vogel, ASC, MCM; Lucien Ballard, ASC, Fox; Cliff Stine, ASC, Universal-International; and Gordon Pollock, ASC, Lippert Productions.

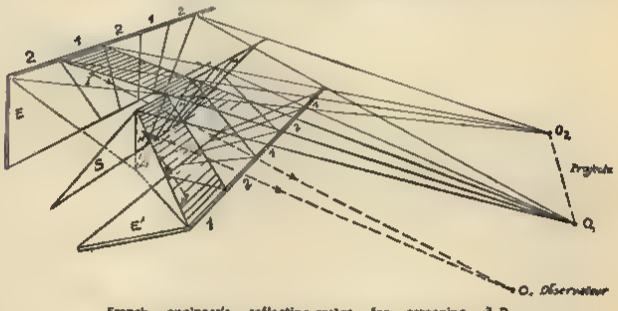
Three-dimension pictures, of course, will have wide-screen movies, such as Cinerama and CinemaScope, for competition. In the final anlysis, it will be the theatre-going public who will decide which innovation or if both are to prevail. Then there is a good chance that wide-screen will successfully be combined with stereoscopic photography. One studio engineer reportedly already has demonstrated a wide-screen 3-D picture 60 feet in width having comparable wide-screen ratio of height. This, shot on regular 35mm film. This same studio is said to have its own version of the anamorphoscope lens, which it is using in its explorations of wide-screen 3-D films.

With most studios in Hollywood, activity in 3-D is so tense and in a state of flux, few technical men are able to make definite committments regarding studio plans or developments. With some studios, plans change hourly; new developments are arrived at and new equipment perfected, all of which constantly changes the picture as a whole.

But in the final analysis, 3-D is basically a photographic problem. It has remained for the cameramen, the heads of camera departments, and other technical men closely related to the photography of films to bring 3-D pictures to fruition in the current and sudden trend of the industry toward stereoscopic picture production. New developments and startling innovations are bound to follow, and it will pay all those interested in this phase of film production to keep close watch on Hollywood in the near future. END

A New Approach To 3-D Movies Without Viewers

(Reprinted from British Journal of Photography)



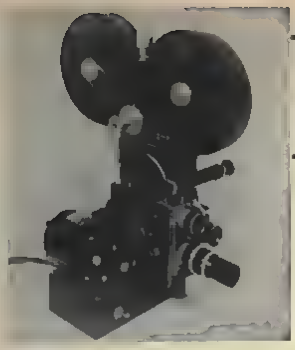
French engineer's reflecting-raster for screening 3-D movies may be answer to the Polaroid spectacles problem

Everyone may take stereoscopic motion pictures and, if particular arrangements of the binocularly disposed lenses and reflectors show considerable inventive ingenuity, the basic arrangements from which they are derived are soundly practical and the result is never in doubt.

When we pass, however, from the camera to the projector—from the taking stage to the receiving end—extremely acute difficulties arise immediately when it comes to a matter of distributing a three-dimensional image (or pairs of images) to the audience, without utilizing individual selective aids such as polarizing filters, color filters, blinking devices, or similar accessories located in the view-path of each observer.

With one or two exceptions (such as Dodin's concave mirror screen described in American Cinematographer for July, 1952), almost all attempts towards providing twin aspect beams from the projection screen depend on vertical rasters, or rasters of lenticular form (cylinders, rods, facets, and so forth) whereby the two pictures are separately directed or occluded, so that each eye sees only its appropriate view.

We have had fixed rasters, inclined rasters, conically disposed rasters, rasters of wire, of plastic, and, of course, rasters in rotary motion. Nobody has yet proposed to oscillate the audience



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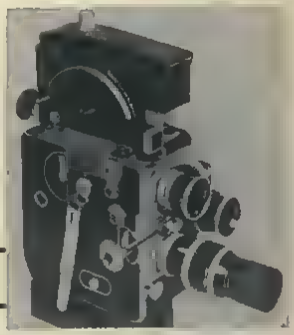

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by way of a change; but even that might follow, if the result appeared promising. This is not intended to be funny; but rather to show the difficulties against which inventors and investigators have struggled to find a 100 per cent successful method.

A new approach to this problem is now offered by a French engineer and B.Sc., Mr. Alexandre Filippi (*Photo-Cinema*, Feb., 1952). In this Filippi procedure we are back again amongst rasters, but the inventor proposes certain novel features, including a reflecting raster. An important factor in this new arrangement would be lighting efficiency. Not only the inconvenience of polarized spectacles but also their wastage of light would be eliminated. Likewise the inevitable light loss where one half of each projected image is suppressed by the masking of the rasters of the alternative aspect.

The Filippi method operates along the following lines:

If we consider a plane grid or raster with black opaque and relatively wide bars (say, of one half inch width) viewed from a distance of 30 feet or even more, we should find that grid unpleasantly evident to the sight. But by forming the rasters into reflectors (making them of plane mirrors, as by

(Continued on Page 139)

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PRACTICAL FILMING TECHNIQUES

(Continued from Page 129)

for each film, though the distant background remains identical. In more complicated matte shots such as ceilings, where fairly close architectural objects at many planes are required, the "foreground miniature" technique may be followed. Miniature settings will require that the interocular be less than normal.

To assist cinematographers in arriving at the correct interocular distance for photographing a given miniature set, the following formula has been established:

$$S = \frac{2\frac{1}{2} \quad D^*}{D}$$

S is the separation between the lenses in making the stereoscopic pair; D is the visual distance to which the object is apparently to be brought, and D* is the actual distance of the object.

The following table shows how far the interocular of the lenses must be separated for conditions of miniature photography (or inserts, etc.) to give the stereoscopic effect. The first column represents *in feet*, the distance from the camera to the object being photographed. The top row shows the spacing of the lenses, *in inches*, necessary to place the object visually for the stereoscopic effect desired:

Interocular: Distance	1"	1½"	2"	2½"	3"
100	250	166 6	125	100	83 3
75	187 5	125	93 7	75	62 3
50	125	83 3	62 5	50	41 6
25	62 5	41 6	31 7	25	20 8
10	25	16 6	12 5	10	8 3

For example, to photograph a miniature ship that is 50 feet from the lens so that it will appear to be 125 feet away, the interocular of the lenses must be only one-inch apart. Likewise a separation of 1½ inches will give the apparent distance of 83 3 feet, etc. Separating the lenses greater than normal will bring distant objects apparently closer; that is, an object 100 feet away at the normal separation of 2½ inches, will appear to be only 83.3 feet away if the interocular is 3 inches; 62 5 feet at four inches, etc. This adjustment may be helpful when telephoto shots are required.

The above shows how important is the proper spacing of 3-D lenses for special effects as well as for normal three-dimension reproduction. Those cameras which permit of only excess separation cannot but produce abnormal and distorted stereoscopic pictures. Much of the objection to 3-D films that is now blamed on the viewing glasses actually is not due to the glasses, but to error in filming in the first instance.

Now that three-dimensional films apparently are here to stay, it behoves our camera manufacturers to make available double-film cameras having adjustments for convergence and lens-separation, so that the problems of producing stereo films may be technically improved. All that can be done for the present is to use make-shift, double-camera equipment.

I have indicated that eventually Polaroid glasses will improve from the present give-away cardboard affairs to better types with broader, more comfortable vision. It is also to be hoped that the conventional theatre screen will assume larger proportions for 3-D, for the stereoscopic effect is improved as the screen approaches the more normal scope of vision. Today we are witnessing a gradual freeing of the old concept that the screen must be surrounded with a black velvet border hung in a black hole. This has long been responsible for color films appearing more garish than they really are, and on the whole such screens produce an unnatural intensified effect. With the current trend toward wide screens, part of the realistic effects of the latter can be applied here as well, and we will diminish the unnatural illusion of looking through a small window.

Because the field of vision of normal eyesight greatly exceeds the proportions of the usual movie screen, there is a trend to present a wide screen picture that more naturally approaches human vision. The great success of Cinerama is due to what is known as "surround." That is, the spectator is surrounded with a huge picture. While the center portion may contain the principal objects of interest, still the viewer is free to scan the side areas and thus gain a truer conception of his surroundings. Combined with stereophonic sound, the effect is truly astounding and unquestionably is an emotional thrill. The mechanical problems and very expensive installation costs of Cinerama may retard its rapid application in our theatres. Meantime, inventors have been quick to produce another excellent system that produces much of the same effect with very little expense and alterations of the theatre. I refer to the device now known as CinemaScope, which is described elsewhere in this issue. In practice a regular 35mm camera is fitted with a concave compression lens over the standard lens. This extra lens compresses the image in a lateral dimension only, the height not being altered. The projector is fitted with a de-compression lens and the picture is thus expanded to normal proportions again. Using a very wide screen to obtain the "surround effect," a picture is produced by a combination of the extra lens and a wider angle projection lens that fills the screen with picture. As only one camera and one projector are involved, there is a minimum of mechanical unsteadiness and no distortion whatever. As stereophonic sound is also used with this method, the sound tracks are on a separate film, permitting the camera and projector to utilize the full film aperture, which at present is shared with the sound track.

While this method makes no claim to being a true 3-dimensional picture system, a certain roundness is obtained due to the size and curvature of the screen, and an illusion of reality is created by the stereophonic sound system. At any rate a new dimension in movies is brought to audiences and it may capture their interest for some years to come.

The CinemaScope films made so far indicate that no great change of filming techniques are to be encountered. Boom, traveling and panoramic shots present no problem mechanically. These will have to be much smoother than in the past because the new, huge dimensions exaggerate such lateral movement due to the wider field. Tilting up or down produces no distortion. Pan shots will be less used for it will be more effective to see and hear the characters move across the screen than to pan with them and thus keep the sound emanating from the center sound speaker. Because of the vastness of the picture, great detail is seen, so it will be unnecessary to make individual closeups to put over facial expression. Two shots and even four-shots are much more effective in CinemaScope, for the composition is better balanced and the sound sources behind the screen are used to best advantage.

It does not necessarily follow that all sets for CinemaScope will have to be larger with this new screen proportion. True, we will encompass more of the set but instead of panning the actors across, we will allow them to cross the screen and perhaps move in to medium and closer shots, as the action requires. Likewise the sets do not have to be higher than at present. This proportion lends itself to new and interesting compositions, and foreground objects will be utilized for depth illusion.

All the new methods of 3-D and wide-screen movies currently being developed promise a re-vitalization of the motion picture industry. Judging from past experience, audiences will again be attracted to the theatres to participate in the new thrills and novel ways of story telling that await them.

Here again is another example of the engineer and cinematographer leading the motion picture industry to new horizons. The artistic and emotional stimuli that can be conveyed by the director of photography in these new mediums is a challenge that will not be found wanting.

END

3-D MOVIES WITHOUT VIEWERS

(Continued from Page 137)

suitably removing intervening bands of silver from an ordinary mirror, or by utilizing polished metal strips on a flat mounting) then we have a raster system without black separating bars and one which will also reflect those portions of the beam which are incident on it Such a reflecting raster is shown at **S** in the diagram

Rays which were absorbed and became a total loss—geometrically and physically—with the black grid, are now reflected and can be utilized to form the other aspect of the picture on a second screen. **E'**, arranged symmetrically with regard to the first, background screen **E**

Given the two picture aspects as projected from positions O_1 and O_2, the viewer at **O** perceives. (1) through the gaps in the reflecting raster **S** the picture strips on the back screen **E** and (2) through the reflectors, the strips of pictures received on the second screen **E'** These strips of the second aspect are exactly those which were absent from the first view and thus a complete view of both aspects is secured.

In effect, the viewer perceives the back screen directly and superposed on it the virtual image of the second screen **E'** Certain residual imperfections remain to be eliminated and this will be developed later. At this stage it may be useful to observe that the provision of a grid or raster which combines the functions of an occluding means (hiding the unwanted picture aspect) with the active function (reflecting the alternative picture aspect) has the result that a more uniformly illuminated surface is presented to the viewer; whereas in a simple, non-reflecting raster system one half of each image is absorbed and contributes nothing to the overall illumination.

Furthermore, and this is possibly another advantage which follows from the preceding effect, with evenly illuminated rasters filling the whole field of view, the actual widths of the bars may be greater than where the aspects are discontinuous with intervening black bars, without their presence becoming noticeably detrimental to viewing comfort.

END

HOLLYWOOD BULLETIN BOARD

(Continued from Page 102)

PAUL VOGEL, ASC, who worked with John Arnold, ASC, in making exhaustive tests of MGM's new 3-D camera, was assigned to shoot studio's initial stereo feature, "Arena" in AnscoColor.

▲

INADVERTENTLY we omitted the "ASC" after the name of Joseph Ruttenberg when listing him in this column last month as one of the directors of photography voted a candidate for nomination for an Academy Award. This is just to let readers know that Joe still is a member of the ASC—in fact is a Member of the Board

▲

IN THE SAME ISSUE Sam Leavitt's name appears as "Levinson"—for which we apologize Gremlins we got! Sam photographed "The Thief," contender for an Award for black-and-white photography

OLLE COMSTEDT, ASC, (l) who directed photography of "Chuck Hansen—One Guy," for D P M Prod, H Y, discusses script with one of cast and director Maurice T. Green (r). Production films to promote anti-discrimination in industry employment

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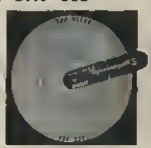

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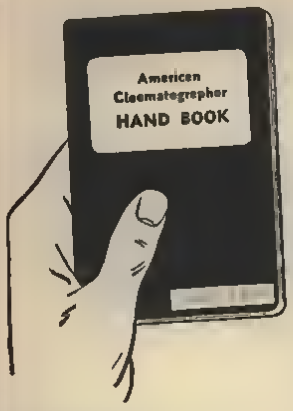

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3-Dimension Optical Effects

By GEORGE BURTT

NATURAL VISION Corporation's first 3-D feature picture is deservedly hailed as a pioneering venture into the new realm of 3 dimensional motion pictures.

Solving successfully the many problems involved in linking two cameras to shoot not-quite-identical films of the same scene so as to give the stereoscopic 3-D effect when projected, reflects tremendous credit on the technical people behind Natural Vision, the developer of the Polaroid 3-D process.

However, not all the problems connected with bringing this first feature to the screen were solved in the camera and projector systems. The lab and optical effects people did a good bit of the pioneering too.

About 3000 feet of the eight-reeler required effects of one kind or another —actually, 6000 feet, since the second camera doubled the footage. But complicating factors multiplied the amount of film stock required astronomically, as Cinema Research Corporation, who were given the optical effects contract, soon discovered. And to top it off, a time limit of 2½ weeks was set for completion of all effects.

Briefly, this is the problem Cinema Research and Consolidated (who did the lab work) were faced with:

The most obvious problem—that of keeping the two original negatives synchronized frame for frame—was solved by a careful coding system.

But the filming was done on Ansco Color stock. Thus in order to arrive at the final duplicate negatives embodying the optical effects it was necessary first to make separation master positives. A scrupulous watch had to be kept on all three positives for the left-hand camera and the right-hand camera simultaneously to make certain gamma contrasts were maintained at the specified levels.

When the six separation master positives were recombined to give the two dupe negatives required, further complications arose. Constant care was exercised to keep the positives in register, with a perfect match between the two resulting negatives. In addition, fades, dissolves, optical zooms and other effects had to match perfectly—involving the three positives for each dupe negative, or a total of six.

Though only 3000 feet was involved, in order to process it about 18,000 feet had to be handled and kept in balance and in sync frame for frame.

Cinema Research was able to salvage some scenes where right-hand and left-hand scenes did not match perfectly in the original negatives. By first registering both scenes, then optically printing only the areas of the negative common to both, a satisfactory solution was reached and re-shooting avoided. END

WHAT'S NEW IN EQUIPMENT, ACCESSORIES

(Continued from Page 96)

ers; mount for camera and motor; off-on switch; 12-ft of HD cable; and heavy-duty fiber carrying case.

Addition of external magazine permits use of 100- or 200-ft rolls of film, as well as the full 400 ft. rolls.

Literature is available. Please refer to *American Cinematographer* in your request.

3-D Magnasync Sound—Magnasync, P.O. Box 707, No. Hollywood, Calif., announces a 3-channel stereophonic sound system which consists of master recorder with three master recorder-amplifiers and interlocked tandem mixers. Theatre playback system has identical film transport and matched-head system with pre-amplifiers, and provides facilities for interlocking with theatre projection equipment.

Further information may be obtained by writing the manufacturer and referring to *American Cinematographer*.

Film Cleaner — A ten-day free trial of the Ecco Speedrol film cleaner is offered by the manufacturer, Electro-Chemical Products Corp., 60 Franklin St., East Orange, N. J. Device permits cleaning film static-free as you inspect it when set up in the line of film travel between two rewinds. At same time film is conditioned for longer life. Some advantages claimed for system are as follows: stops dirt attraction by static; eliminates waxing; reduces surface friction; conditions green prints; uses no carbon tet, treatment cannot be seen or felt.

For more complete information, write manufacturer, mentioning *American Cinematographer*.

Hallen Stereo-sound — Hallen Corp., 3503 West Olive, Burbank, announces that all model Hallen magnetic recorders are adaptable to either binaural or stereophonic sound—the 16mm and 17½mm recorders for binaural, and the 35mm

(Continued on Page 142)

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(Continued on Next Page)

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WHAT'S NEW IN EQUIPMENT, ACCESSORIES

(Continued from Page 140)

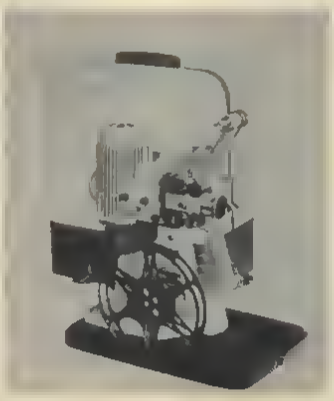
for stereophonic 3-track. Conversion is effected simply by adding necessary amplification and making a minor change in the recorder playback, according to the company.

Please mention *American Cinematographer* when requesting further details

---

New 16mm Projector — Bell & Howell Company, Chicago, announces a new 16mm silent projector priced at $199 95. Modern styling includes a two-tone grey plastic case which slips over projector and latches to projector platform.

The new model (No. 273) is said to give a brighter screen image with a



750-w lamp than other machines, which is accomplished by a straight-line optical system and a new type lamp having a more compact filament Rewinding is accomplished without switching reels. Film capacity is 400 feet

Company also announces improvement of its Diplomat 16mm projector to include the new style plastic carrying case at no additional cost.

Titles in 3-D — Ray Mercer & Company, 4241 Normal Ave., Hollywood 29, Calif., are now turning out three-dimension titles to meet the needs of the many film producers making films in the new 3-D medium. Company is oldest established independent special effects and title laboratory on the west coast.

Midget Exposure Meter — Alfa Photo Corp., 303 West 42nd St., New York 36, N. Y., is U.S distributor of the Actino C Meter, said to be the smallest photo cell exposure meter made, weight,

2½ oz; size ⅝" X 1" X 1½" Meter is said to be extremely accurate under all light conditions; gives readings for shutter speeds from 4 seconds to 1/1000 sec., and provides for use with ASA film ratings from 6 to 400

Photo Lamps — Mayfair Manufacturing Co., 89 93 Grand St., Brooklyn 11, N. Y., offers a convenient lighting unit for indoor movie making called the Extendolite, a folding 4-lamp bracket which attaches to camera or camera-and-tripod

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